S8036

Version 1.0h

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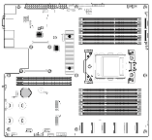
Before you begin…

Check the box contents!

The retail motherboard package should contain the following:

	S8036 Motherboard x 1
	SATA Single Cable x 2
	Rear IO shielding x 3
	1 x S8036 Quick Installation Guide
	M.2 Screw kit x2

IMPORTANT NOTE:
Sales samples may not come with any of the accessories listed above.
If you have ordered a sales sample and you are missing any of the above items, please contact your sales representative to help order accessories.

Chapter 1: Instruction

1.1 Congratulations

You have purchased the powerful TYAN® S8036 motherboard, based on the Aspeed® AST2500 chipset. The S8036 is designed to support AMD® EPYC™ 7002/7003 series Processor, and Up to 1,024GB RDIMM/ 4,096GB LRDIMM DDR4 2667 MHz memory. Leveraging advanced technology from AMD®, the S8036 is capable of offering scalable 32 and 64-bit computing, high-bandwidth memory design, and lightning-fast PCI-E bus implementation.

The S8036 not only empowers you in today's demanding IT environment but also offers a smooth path for future application upgradeability. All of these rich feature sets provide the S8036 with the power and flexibility to meet demanding requirements for today's IT environments.

Remember to visit the TYAN® website at **http://www.tyan.com**. There you can find all the information on all TYAN® products as well as all the supporting documentation, FAQs, Drivers and BIOS upgrades.

1.2 Hardware Specifications

S8036GM2NE Specifications

Processor	**Q'ty / Socket Type**	(1) AMD Socket SP3
	Supported CPU Series	(1) AMD EPYC™ 7002/7003 Series Processor
	Configurable Thermal Design Power (cTDP) Wattage	Max up to 280W
Memory	**Supported DIMM Qty**	(16) DIMM slots
	DIMM Type / Speed	DDR4 ECC RDIMM/RDIMM 3DS/LRDIMM/LRDIMM 3DS 3200
	Capacity	Up to 2,048GB RDIMM, 4,096GB LRDIMM 3DS
	Memory channel	8 Channels per CPU
	Memory voltage	1.2V
Expansion Slots	**PCI-E**	(1) PCI-E Gen4 x 24 slot, (1) PCI-E Gen4 x 24 slot (w/x16 link; can be x24 link if OCP mezz. conn.B is not

			used. Please contact with Tyan technical support for details.)
	Recommended TYAN Riser Card (PCI-E Gen4)		M8036-L24-3F, 2U riser card for slot #6 w/ (3) PCI-E slots (left), M8036-R24-3F, 2U riser card for slot #6.5 w/ (3) PCI-E slots (right)
	Others		(1) PCI-E Gen3 x16 OCP 2.0 slot (conn.A+conn.B)
LAN	**Q'ty / Port**		(2) GbE ports + (1) GbE dedicated for IPMI
	Controller		Broadcom BCM5720
	PHY		Realtek RTL8211E
Storage	**SATA**	**Connector**	(2) SFF-8654 connectors for up to (16) SATA ports
		Controller	Direct from AMD EPYC CPU
		Speed	6Gb/s
		RAID	N/A
	Additional SATA	**Connector**	(2) SATA-DOM, (2) SATA
		Controller	Marvell 9235
		Speed	6Gb/s
		RAID	N/A
	NVMe	**Connector (M.2)**	(2) 22110/2280 (by PCI-E Gen3 & SATA interface)
		Connector (Slim SAS)	(8) SFF-8654 for (16) NVMe ports
Graphic	**Connector type**		D-Sub 15-pin
	Resolution		Up to 1920x1200
	Chipset		Aspeed AST2500
Input /Output	**USB**		(2) USB3.1 Gen1 ports (@ rear), (2) USB3.1 Gen1 ports (via Cable), (1) USB3.1 Gen1 port (Type-A)
	COM		(1) DB-9 COM Connector (at rear, COM1) + (1) Header (COM2)
	VGA		(1) D-Sub 15-pin VGA port (@ rear)
	RJ-45		(2) GbE ports, (1) GbE dedicated for IPMI

	Front Panel	(1) 2x12-pin SSI front panel header
	SATA	(2) SATA-III connectors + (2) SATA-DOM connectors + (16) SATA ports from (2) Slim SAS connectors
	Power	SSI 24-pin + 8-pin + 8-pin power connectors
TPM (Optional)	**TPM Support**	Please refer to our TPM supported list.
System Monitoring	**Chipset**	Aspeed AST2500
	Fan	Total (6) 4-pin headers
	Temperature	Monitors temperature for CPU & memory & system environment
	Voltage	Monitors voltage for CPU, memory, chipset & power supply
	LED	Fan fail LED indicator, Over temperature warning indicator, Fan & PSU fail LED indicator
	Others	Watchdog timer support
Server Management	**AST2500 iKVM Feature**	24-bit high quality video compression, Supports storage over IP and remote platform-flash, USB 2.0 virtual hub
	AST2500 IPMI Feature	IPMI 2.0 compliant baseboard management controller (BMC), 10/100/1000 Mb/s MAC interface
BIOS	**Brand / ROM size**	AMI, 32MB
	Feature	Hardware Monitor, SMBIOS 3.0/PnP/Wake on LAN, Boot from USB device/PXE via LAN/Storage, Console Redirection, ACPI 6.1, ACPI sleeping states S0, S5, FAN speed control automatic
Physical Dimension	**Form Factor**	EATX
	Board Dimension	12" x 13" (305 x 330mm)
Regulation	**FCC (SDoC)**	Class A
	CE (DoC)	Class A
Operating Environment	**Operating Temp.**	10° C ~ 35° C (50° F~ 95° F)
	Non-operating Temp.	- 40° C ~ 70° C (-40° F ~ 158° F)
	In/Non-operating Humidity	90%, non-condensing at 35° C

RoHS	**RoHS 6/6 Compliant**	Yes	
Operating System	**OS supported list**	Please refer to our AVL support lists.	
Package Contains	**Motherboard**	(1) S8036 Motherboard	
	Manual	(1) Quick Installation Guide	
	I/O Shield	(1) I/O Shield	
	Cable	**SATA**	(2) SATA signal cables

S8036GM2NE-LE Specifications

Processor	**Q'ty / Socket Type**		(1) AMD Socket SP3
	Supported CPU Series		(1) AMD EPYC™ 7002/7003 Series Processor
	Configurable Thermal Design Power (cTDP) Wattage		Max up to 280W
Memory	**Supported DIMM Qty**		(16) DIMM slots
	DIMM Type / Speed		DDR4 ECC RDIMM/RDIMM 3DS/LRDIMM/LRDIMM 3DS 3200
	Capacity		Up to 2,048GB RDIMM, 4,096GB LRDIMM 3DS
	Memory channel		8 Channels per CPU
	Memory voltage		1.2V
Expansion Slots	**PCI-E**		(1) PCI-E Gen4 x 24 slot, (1) PCI-E Gen4 x 24 slot (w/x16 link; can be x24 link if OCP mezz. conn.B is not used. Please contact with Tyan technical support for details.)
	Recommended TYAN Riser Card (PCI-E Gen4)		M8036-L24-3F, 2U riser card for slot #6 w/ (3) PCI-E slots (left), M8036-R24-3F, 2U riser card for slot #6.5 w/ (3) PCI-E slots (right)
	Others		(1) PCI-E Gen3 x16 OCP 2.0 slot (conn.A+conn.B)
LAN	**Q'ty / Port**		(2) GbE ports + (1) GbE dedicated for IPMI
	Controller		Broadcom BCM5720
	PHY		Realtek RTL8211E
Storage	**SATA**	**Connector**	(2) SFF-8654 connectors for up to (16) SATA ports
		Controller	Direct from AMD EPYC CPU
		Speed	6Gb/s
		RAID	N/A
	Additional SATA	**Connector**	(2) SATA-DOM, (2) SATA
		Controller	Marvell 9235
		Speed	6Gb/s

	RAID	N/A
	NVMe Connector (M.2)	(2) 22110/2280 (by PCI-E Gen3 & SATA interface)
Graphic	**Connector type**	D-Sub 15-pin
	Resolution	Up to 1920x1200
	Chipset	Aspeed AST2500
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	VGA	(1) D-Sub 15-pin VGA port (@ rear)
	RJ-45	(2) GbE ports, (1) GbE dedicated for IPMI
	Front Panel	(1) 2x12-pin SSI front panel header
	SATA	(2) SATA-III connectors + (2) SATA-DOM connectors + (16) SATA ports from (2) Slim SAS connectors
	Power	SSI 24-pin + 8-pin + 8-pin power connectors
TPM (Optional)	**TPM Support**	Please refer to our TPM supported list.
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	CE (DoC)	Class A	
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	Non-operating Temp.	- 40° C ~ 70° C (-40° F ~ 158° F)	
	In/Non-operating Humidity	90%, non-condensing at 35° C	
RoHS	**RoHS 6/6 Compliant**	Yes	
Operating System	**OS supported list**	Please refer to our AVL support lists.	
Package Contains	**Motherboard**	(1) S8036 Motherboard	
	Manual	(1) Quick Installation Guide	
	I/O Shield	(1) I/O Shield	
	Cable	**SATA**	(2) SATA signal cables

1.3 Software Specifications

For the latest AST2500 User's Guide and OS (operation system) support, please visit the Tyan's Web site at http://www.tyan.com for the latest information

Chapter 2: Board Installation

You are now ready to install your motherboard.

How to install our products right… the first time

The first thing you should do is read this user's manual. It contains important information that will make configuration and setup much easier. Here are some precautions you should take when installing your motherboard:

(1) Ground yourself properly before removing your motherboard from the antistatic bag. Unplug the power from your computer power supply and then touch a safely grounded object to release static charge (i.e. power supply case). For the safest conditions, MiTAC recommends wearing a static safety wrist strap.
(2) Hold the motherboard by its edges and do not touch the bottom of the board, or flex the board in any way.
(3) Avoid touching the motherboard components, IC chips, connectors, memory modules, and leads.
(4) Place the motherboard on a grounded antistatic surface or on the antistatic bag that the board was shipped in.
(5) Inspect the board for damage.

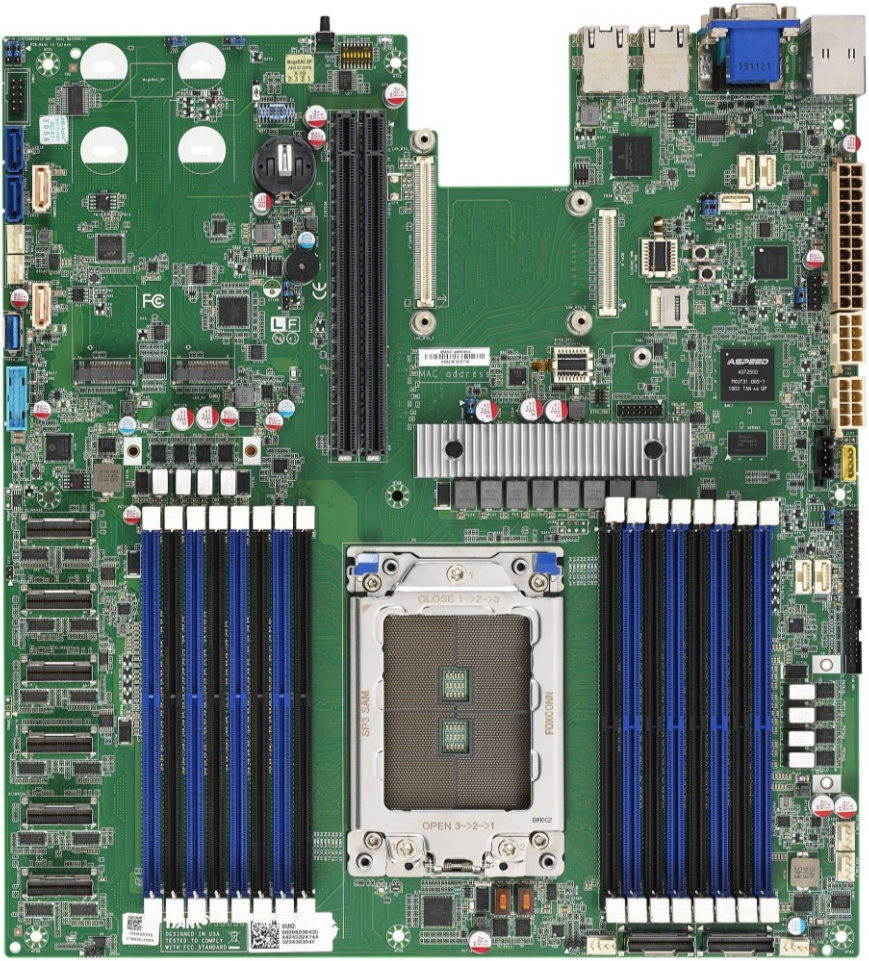
The following pages include details on how to install your motherboard into your chassis, as well as installing the processor, memory, disk drives and cables.

Caution!

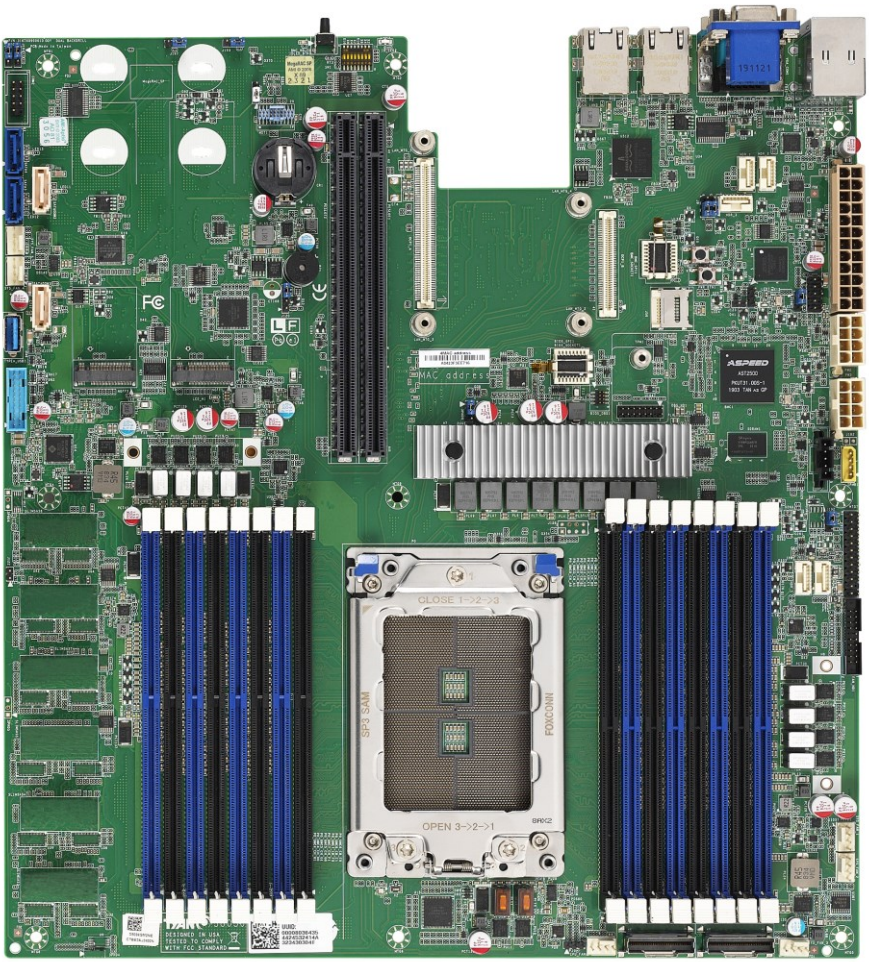
1. To avoid damaging the motherboard and associated components, do not use torque force greater than 5~7kgf/cm (4.35~6.09 lb/in) on each mounting screw for motherboard installation.

2. Do not apply power to the board if it has been damaged.

2.1 Board Image



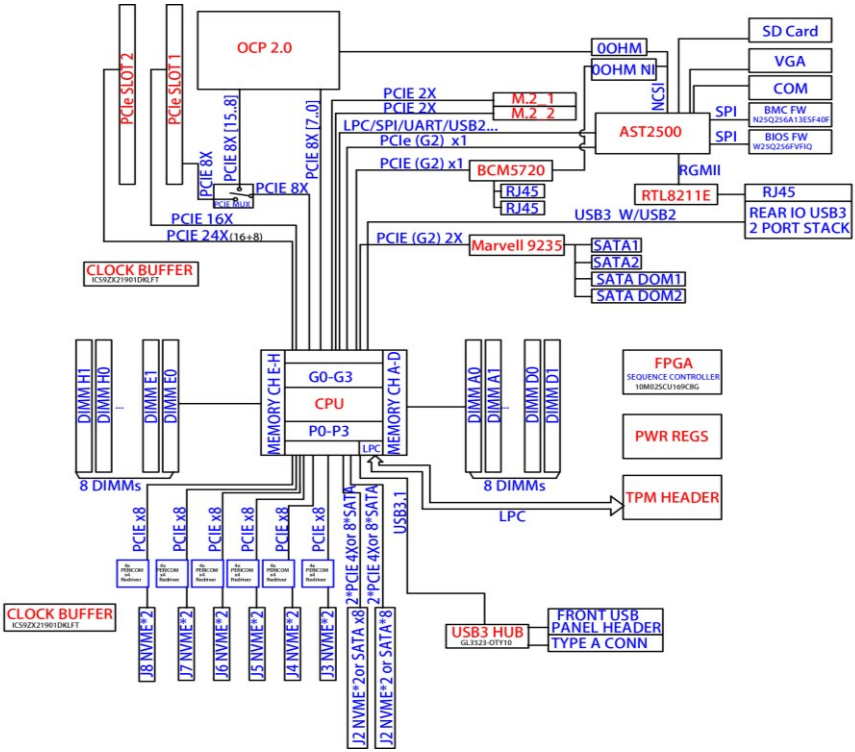
S8036GM2NE



S8036GM2NE-LE

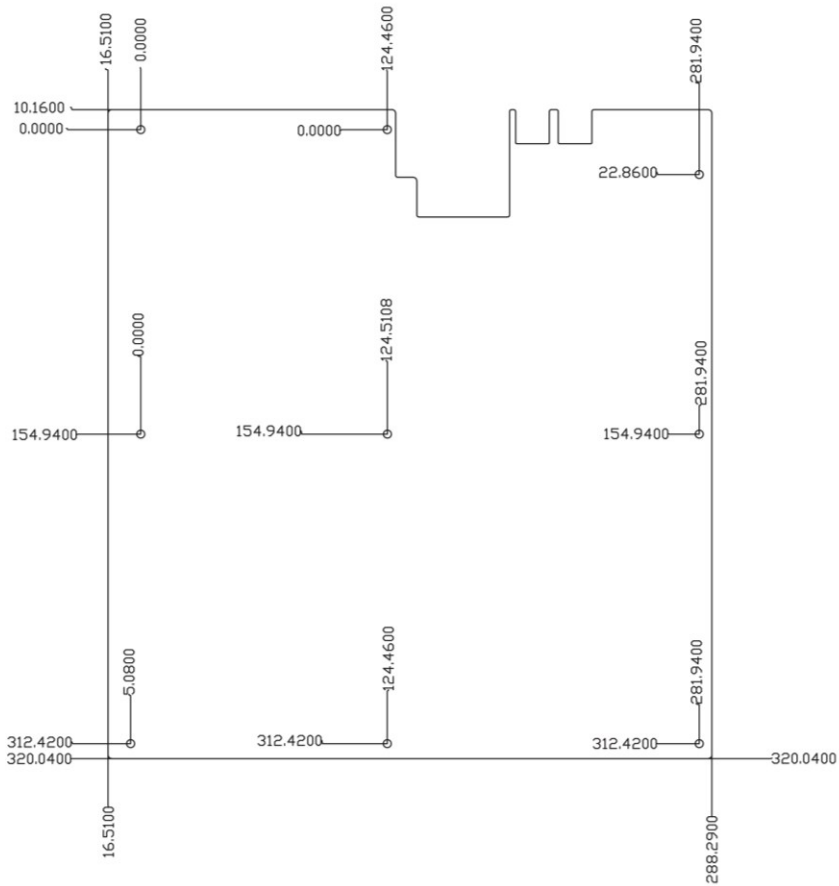
This picture is representative of the latest board revision available at the time of publishing. The board you receive may not look exactly like the above picture.

2.2 Block Diagram

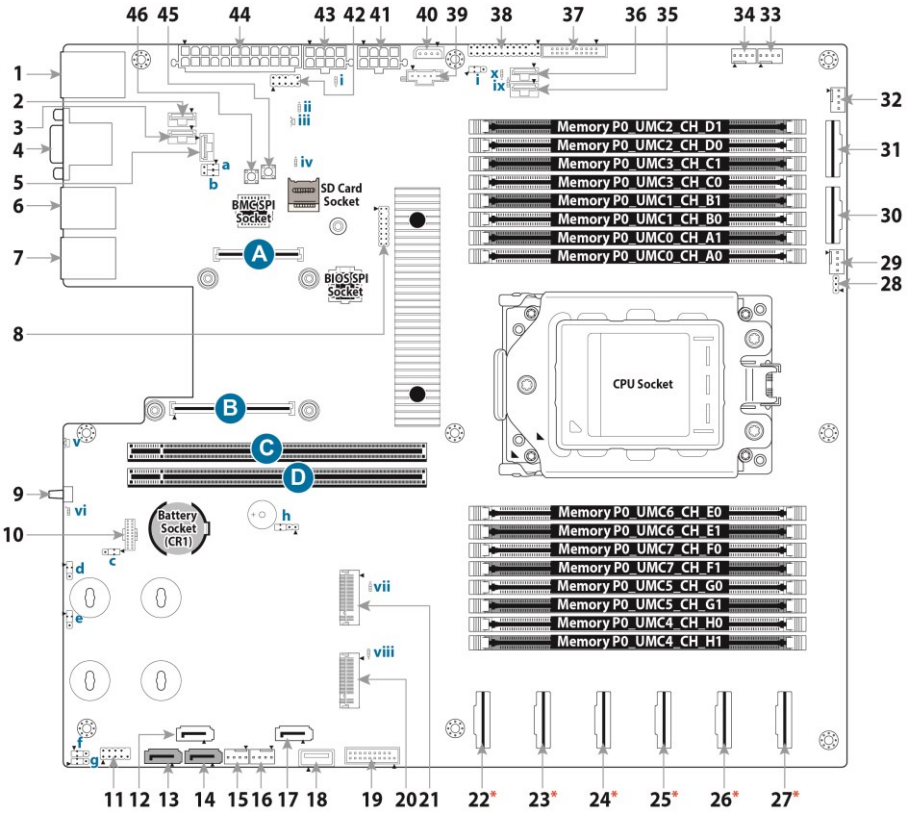


S8036 Block Diagram

2.3 Motherboard Mechanical Drawing



2.4 Board Parts, Jumpers and Connectors



This diagram is representative of the latest board revision available at the time of publishing. The board you receive may not look exactly like the above diagram. The DIMM slot numbers shown above can be used as a reference when reviewing the DIMM population guidelines shown later in the manual. For the latest board revision, please visit our web site at **http://www.tyan.com**.

Motherboard Components

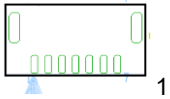
Connectors	
1. Dedicated IPMI port+USB3.0 x 2(LAN1)	24. PCIE 74P SlimSAS Connector (SLIMSAS 7 removed on -LE SKU)
2. CPU SMBUS Header (HDR_2)	25. PCIE 74P SlimSAS Connector (SLIMSAS 5 removed on -LE SKU)
3. CPU SMBUS Header (HDR_1)	26. PCIE 74P SlimSAS Connector (SLIMSAS 4 removed on -LE SKU)
4. VGA + COM Port (VGA_COM1)	27. PCIE 74P SlimSAS Connector (SLIMSAS 3 removed on -LE SKU)
5. CPU SMBUS Header (HDR_3)	28. Power SMBUS Header (PJ1)
6. BCM5720 RJ45 LAN Connector (LAN2)	29. CPU_FAN (CPU_FAN)
7. BCM5720 RJ45 LAN Connector (LAN3)	30. PCIE/SATA 74P SLIMSAS Connector (SLIMSAS2)
8. TYAN Module Header (DBG_HD1)	31. PCIE/SATA 74P SLIMSAS Connector (SLIMSAS1)
9. Rear ID LED Button (ID LED_BTN1)	32. Front Fan_3 (SYS_FAN_3)
10. HDT Header (HDT1)	33. Front Fan_2 (SYS_FAN_2)
11. COM2 Header (COM2)	34. Front Fan_1 (SYS_FAN_1)
12. SATA Connector (SATA 3.0 signals) 7Pin+2Power(SATADOM2)	35. CPU SMBUS Header (HDR_5)
13. SATA Connector (SATA4)	36. CPU SMBUS Header(HDR_4)
14. SATA Connector (SATA3)	37. FAN Header (FAN_HD1)
15. RearFan_2 (SYS_FAN_5)	38. Front Panel Header (FPIO_2)
16. RearFan_1 (SYS_FAN_4)	39. PSMI Header (PSMI_HD1)
17. SATA Connector(SATA 3.0 signals) 7Pin+2Power (SATADOM1)	40. IPMB Header (IPMB1)
18. Vertical Type A USB Connector (TYPEA_USB1)	41. 8-pin Power Connector (PW3)
19. FPB USB2.0/USB3.0*2 Header (USB3_FPIO1)	42. CPLD JTAG Connector (JTAG1)
20. NGFF 32x80mm & 32x110mm M.2 Connector (NGFF2)	43. 8-pin Power Connector (PW2)
21. NGFF 32x80mm & 32x110mm M.2 Connector (NGFF1)	44. ATX Power Connector (24p)(PW1)
22. PCIE 74P SlimSAS Connector (SLIMSAS 8 removed on -LE SKU)	45. Power Button (PWR_BTN1)
23. PCIE 74P SlimSAS Connector (SLIMSAS 6 removed on -LE SKU)	46. Reset Button (COLD_RST_BTN1)
Jumpers	
a. J1 NVMe or SATA Select (J9_13)	e. BMC CPU COM1 (RX) (J197)
b. J1 NVMe or SATA Select (J9_24)	f. BMC COM PORT2 (TX) (J191)
c. CMOS Clear Jumper (J194)	g. BMC COM PORT2 (RX) (J190)
d. BMC CPU COM1 (TX) (J193)	h. PC BEEP (J120)
	I. System RESET (J192)
PCIE Slots	
A OCP B Slot (OCP1_B)	C. PCIE3.0 Slot x24 （PESLOT1）
B. OCP B Slot (OCP1_A)	D. PCIE3.0 Slot x24 （PESLOT2）

LEDs	
i PSU_ALERT_N LED (PSMI_LED1)	**vi** BMC Heartbeat LED (BMC_HBLED)
ii PWR_GOOD_LED (LED5)	**vii** NGFF1_LED(LED_M1)
iii RESET_LED_LED (LED7)	**viii** NGFF2_LED(LED_M2)
iv P0_PROCHOT_ LED (LED4)	**ix** Onboard BMC IPMI ALERT LED (IPMI__LED2)
v Rear ID LED (ID_LED2)	**x** HDD_ACT_LED (HDD_LED3)

NOTE:

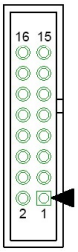
1. SD card socket is an OEM-reserved feature which is not enabled on current product offering.
2. HDR_1-5: NVME Hotplug I2C connector for NVME HDD backplane.

HDR_1/HDR_2/HDR_3/HDR_4/HDR_5: CPU SMBUS Header



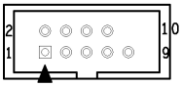
Signal	Pin	Pin	Signal
VDD_33_DUAL	1	2	HP_SCK
HP_SDA	3	4	HP_ALERT
NA	5	6	NA
GND	7		

DBG_HD1: TYAN Module Header



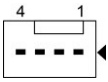
Signal	Pin	Pin	Signal
VDD_33_RUN	1	2	FRAME_N
LAD0	3	4	KEY
LAD1	5	6	RESET#
LAD2	7	8	GND
LAD3	9	10	CLK
DBG_SERIRQ	11	12	GND
DBG_PRES_N	13	14	3VSB
NA	15	16	TPM_PP_EN

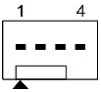
COM2: Serial Port Header



Signal	Pin	Pin	Signal
DCD	1	2	DSR
SIN	3	4	RTS
SOUT	5	6	CTS
DTR	7	8	RI
GND	9	10	KEY

CPU FAN/ SYS FAN1~5: 4-pin CPU Fan Connector





Pin	1	2	3	4
Signal	GND	VCC12	Sensor	Control

Use this header to connect the cooling fan to your motherboard to keep the system stable and reliable.

Note: A 4-pin fan is required for fan support 4pin Control

SATADOM1/SATADOM2: SATA Connector

Name	TYPE
1	GND
2	SATA TX DP
3	SATA TX DN
4	GND
5	SATA RX DN
6	SATA RX DP
7	GND
P1	VCC(P5V)
P2	GND

Connects to the Serial ATA ready drives via the Serial ATA cable.

SATA_3/SATA_4: 7-pin SATA 3.0 Connector

Name	TYPE
1	GND
2	SATA TX DP
3	SATA TX DN
4	GND
5	SATA RX DN
6	SATA RX DP
7	GND

TYPEA_USB1: Vertical (Type_A) USB3.0 Connector

Signal	Pin	Pin	Signal
+5V	1	2	USB2.0_DATA_N
USB2.0_DATA_P	3	4	GND
USB3.0_RX_N	5	6	USB3.0_RX_P
GND	7	8	USB3.0_TX_N
USB3.0_TX_P	9		

USB3_FPIO1: Front USB3.0 Header

Signal	Pin	Pin	Signal
USB3_VCC_FP	1	2	P0_RXN
P0_RXP	3	4	GND
P0_TXN	5	6	P0_TXP
GND	7	8	P0_N
P0_P	9	10	OC_N
P1_P	11	12	P1_N
GND	13	14	P1_TX_P
P1_TX_N	15	16	GND
P1_RX_P	17	18	P1_RX_N
USB3_VCC_FP	19	20	NA

ID LED_BTN1: Rear IO IDLED Button

	Signal	Pin	Pin	Signal
	FP_IDLED_BTN_N	1	2	GND

IPMB_HD1: IPMB Connector

	Signal	Pin	Pin	Signal
4 3 2 1	BMC_SMB_DATA	1	2	GND
	BMC_SMB_CLK	3	4	NC

PSMI_HD1: PSMI Connector

	Pin	1	2	3	4	5
	Signal	SMB_CLK	SMB_DAT	SMB_ALERT#	GND	V3P3

FAN_HD1: System FAN Connector

	Signal	Pin	Pin	Signal
1 2	TACH1	1	2	TACH6
	TACH2	3	4	TACH7
	TACH3	5	6	TACH8
	TACH4	7	8	TACH9
	TACH5	9	10	TACH10
	GND	11	12	KEY
	PWM2	13	14	PWM1
	TACH11	15	16	SMB_DATA
	TACH12	17	18	SMB_CLK
19 20	NC	19	20	PWM3

FPIO2: Front Panel Connector

	Signal	Pin	Pin	Signal
1 2	PWRLED+	1	2	V3P3_AUX
	KEY	3	4	IDLED+
	PWRLED-	5	6	IDLED-
	HDDLED+	7	8	SYS_FAULT1-
	HDDLED-	9	10	SYS_FAULT2-
	PWR_SW#	11	12	LAN0LED+
	GND	13	14	LAN0LED-
	RESET_SW#	15	16	SMBDATA
	GND	17	18	SMBCLK
	IDLED_SW#	19	20	INTRUSION#
	SYS_Air_Inlet	21	22	LAN1LED+
23 24	NMI_SW#	23	24	LAN1LED-

PWR_BTN1: POWER Button

	Pin	1	2	3	4
Normal (Default)	Signal	GND	GND	PWR_BTN1	PWR_BTN1

RST_BTN1: COLD Reset Button

	Pin	1	2	3	4
Normal (Default)	Signal	GND	GND	FP_RST_BTN_N	FP_RST_BTN_N

PJ1: SMBus Connector

	Signal	Pin	Pin	Signal
	SMB CLK	1	2	SMB DATA
	GND	3		

J9: J1 NVMe or SATA Select Jumper

	Signal	Pin	Pin	Signal
	VDD_33_RUN	1	2	VDD_33_RUN
	J1_SATA_NVME#	3	4	J2_SATA_NVME#
	GND	5	6	GND
	1-3: J1 (SlimSAS1) NVME SMBUS **3-5: J1 (SlimSAS1) SATA SGPIO**			

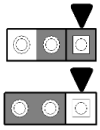
J9: J2 NVMe or SATA Select Jumper

	Signal	Pin	Pin	Signal
	VDD_33_RUN	1	2	VDD_33_RUN
	J1_SATA_NVME#	3	4	J2_SATA_NVME#
	GND	5	6	GND
	2-4: J2 (SlimSAS2) NVME SMBUS **4-6: J2 (SlimSAS2) SATA SGPIO**			

J190/J191: BMC COM PORT2 (RX/TX) Jumper

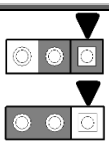
	Signal	Pin	Pin	Signal
1 - 2	BMC_COM_TXD/ BMC_COM_RXD	1	2	TXD_OUT/RXD_OUT
2 - 3	BMC_TXD5 BMC_RXD5	3		
	1-2 : BMC COM PORT2 (DEFAULT) 2-3 : BMC CONSOLE PORT5			

J193/J197: BMC CPU COM (TX/RX) Jumper



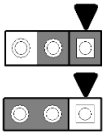
Signal	Pin	Pin	Signal
BMC_COM_TXD/ BMC_COM_RXD	1	2	TXD_OUT/RXD_OUT
P0_UART0_RX/ P0_UART0_TX	3		
1-2 : BMC COM PORT1 (DEFAULT) 2-3 : CPU COM			

J120: PC BEEP Jumper



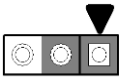
Signal	Pin	Pin	Signal
NC	1	2	PSU_SMB_ALERT_BUFF_N_R
VCC3_Aux	3		
1-2: Normal Mode(Default) **2-3: Enable PSU Throttling Function**			

System Reset Jumper (J192)

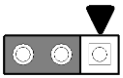


Signal	Pin	Pin	Signal
COLD_RST_BTN_N	1	2	FP_RST_BTN_JP_N
BMC_EXTRST_BTN_L	3		
1-2: SYSTEM RESET (Default) **2-3: BMC RESET**			

J194: CMOS Clear Jumper



Normal
(**Default**)



Clear CMOS

Pin	1	2	3
Signal	Vbat	P0_Vddbt_Rtc_G	GND

1-2 Normal RTC Reset (DEFAULT)
2-3 Clear RTC Registers
You can reset the CMOS settings by using this jumper. This can be useful if you have forgotten your system/setup password, or need to clear the system BIOS setting.
1. Power off system and disconnect power connectors from the motherboard.
2. Remove the jumper from Pin_1 and Pin_2 (Default setting).
3. Move the jumper cap to close Pin_2 and Pin_3 for several seconds to Clear CMOS.
4. Put jumper cap back to Pin_1 and Pin_2 (Default setting).
5. Reconnect power connectors to the motherboard and power on system.

PCIE 74P SlimSAS Connector (SLIMSAS 8/7/6/5/4/3/2/1)

pin	net	pin	net
A1	GND	B1	GND
A2	NVME0_RX_N0	B2	NVME0_TX_N0
A3	NVME0_RX_P0	B3	NVME0_TX_P0
A4	GND	B4	GND
A5	NVME0_RX_N1	B5	NVME0_TX_N1
A6	NVME0_RX_P1	B6	NVME0_TX_P1
A7	GND	B7	GND
A8	NVME0_BP_TYPE	B8	NVME0_SCK
A9	NVME0_WAKE_L	B9	NVME0_SDA
A10	GND	B10	GND
A11	NVME0_PEREFCLK_DP	B11	NVME0_PERST_L
A12	NVME0_PEREFCLK_DN	B12	NVME0_PRSNT_L
A13	GND	B13	GND
A14	NVME0_RX_N2	B14	NVME0_TX_P2
A15	NVME0_RX_P2	B15	NVME0_TX_N2
A16	GND	B16	GND
A17	NVME0_RX_N3	B17	NVME0_TX_P3
A18	NVME0_RX_P3	B18	NVME0_TX_N3
A19	GND	B19	GND
A20	NVME1_RX_N0	B20	NVME1_TX_P0
A21	NVME1_RX_P0	B21	NVME1_TX_N0
A22	GND	B22	GND
A23	NVME1_RX_N1	B23	NVME1_TX_P1
A24	NVME1_RX_P1	B24	NVME1_TX_N1
A25	GND	B25	GND
A26	NVME1_BP_TYPE	B26	NVME1_SCK
A27	NVME1_WAKE_L	B27	NVME1_SDA
A28	GND	B28	GND
A29	NVME1_PEREFCLK_DP	B29	NVME1_PERST_L
A30	NVME1_PEREFCLK_DN	B30	NVME1_PRSNT_L
A31	GND	B31	GND
A32	NVME1_RX_N2	B32	NVME1_TX_P2
A33	NVME1_RX_P2	B33	NVME1_TX_N2
A34	GND	B34	GND
A35	NVME1_RX_N3	B35	NVME1_TX_N3
A36	NVME1_RX_P3	B36	NVME1_TX_P3
A37	GND	B37	GND

PESLOT1 Connector

pin	net	pin	net
A1	GND	B1	VDD_12_RUN_PE
A2	VDD_12_RUN_PE	B2	VDD_12_RUN_PE
A3	VDD_12_RUN_PE	B3	VDD_12_RUN_PE
A4	GND	B4	GND
A5	SLOT1_HP_DATA	B5	PE1_SMB_SCK
A6	SLOT1_HP_CLK	B6	PE1_SMB_SDA
A7	NG	B7	GND
A8	NG	B8	VDD_33_RUN
A9	VDD_33_RUN	B9	NG
A10	VDD_33_RUN	B10	VDD_33_DUAL
A11	PESLOT1_PERST_L	B11	PESLOT1_WAKE_L
A12	GND	B12	NG
A13	PESLOT1_PEREFCLK_DP	B13	GND
A14	PESLOT1_PEREFCLK_DN	B14	CPU0_PCIE_G1_PESLOT2_TX_N15_C
A15	GND	B15	CPU0_PCIE_G1_PESLOT2_TX_P15_C
A16	CPU0_PCIE_G1_PESLOT2_RX_P15	B16	GND
A17	CPU0_PCIE_G1_PESLOT2_RX_N15	B17	NG
A18	GND	B18	GND
A19	NG	B19	CPU0_PCIE_G1_PESLOT2_TX_N14_C
A20	GND	B20	CPU0_PCIE_G1_PESLOT2_TX_P14_C
A21	CPU0_PCIE_G1_PESLOT2_RX_P14	B21	GND
A22	CPU0_PCIE_G1_PESLOT2_RX_N14	B22	GND
A23	GND	B23	CPU0_PCIE_G1_PESLOT2_TX_N13_C
A24	GND	B24	CPU0_PCIE_G1_PESLOT2_TX_P13_C
A25	CPU0_PCIE_G1_PESLOT2_RX_P13	B25	GND
A26	CPU0_PCIE_G1_PESLOT2_RX_N13	B26	GND
A27	GND	B27	CPU0_PCIE_G1_PESLOT2_TX_N12_C
A28	GND	B28	CPU0_PCIE_G1_PESLOT2_TX_P12_C
A29	CPU0_PCIE_G1_PESLOT2_RX_P12	B29	GND
A30	CPU0_PCIE_G1_PESLOT2_RX_N12	B30	NG
A31	GND	B31	NG
A32	PESLOT1_PEREFCLK_B_DP	B32	GND
A33	PESLOT1_PEREFCLK_B_DN	B33	CPU0_PCIE_G1_PESLOT2_TX_N11_C
A34	GND	B34	CPU0_PCIE_G1_PESLOT2_TX_P11_C
A35	CPU0_PCIE_G1_PESLOT2_RX_P11	B35	GND
A36	CPU0_PCIE_G1_PESLOT2_RX_N11	B36	GND
A37	GND	B37	CPU0_PCIE_G1_PESLOT2_TX_N10_C
A38	GND	B38	CPU0_PCIE_G1_PESLOT2_TX_P10_C
A39	CPU0_PCIE_G1_PESLOT2_RX_P10	B39	GND
A40	CPU0_PCIE_G1_PESLOT2_RX_N10	B40	GND
A41	GND	B41	CPU0_PCIE_G1_PESLOT2_TX_N9_C
A42	GND	B42	CPU0_PCIE_G1_PESLOT2_TX_P9_C
A43	CPU0_PCIE_G1_PESLOT2_RX_P9	B43	GND
A44	CPU0_PCIE_G1_PESLOT2_RX_N9	B44	GND
A45	GND	B45	CPU0_PCIE_G1_PESLOT2_TX_N8_C
A46	GND	B46	CPU0_PCIE_G1_PESLOT2_TX_P8_C

A47	CPU0_PCIE_G1_PESLOT2_RX_P8	B47	GND
A48	CPU0_PCIE_G1_PESLOT2_RX_N8	B48	NG
A49	GND	B49	GND
A50	NG	B50	CPU0_PCIE_G1_PESLOT2_TX_N7_C
A51	GND	B51	CPU0_PCIE_G1_PESLOT2_TX_P7_C
A52	CPU0_PCIE_G1_PESLOT2_RX_P7	B52	GND
A53	CPU0_PCIE_G1_PESLOT2_RX_N7	B53	GND
A54	GND	B54	CPU0_PCIE_G1_PESLOT2_TX_N6_C
A55	GND	B55	CPU0_PCIE_G1_PESLOT2_TX_P6_C
A56	CPU0_PCIE_G1_PESLOT2_RX_P6	B56	GND
A57	CPU0_PCIE_G1_PESLOT2_RX_N6	B57	GND
A58	GND	B58	CPU0_PCIE_G1_PESLOT2_TX_N5_C
A59	GND	B59	CPU0_PCIE_G1_PESLOT2_TX_P5_C
A60	CPU0_PCIE_G1_PESLOT2_RX_P5	B60	GND
A61	CPU0_PCIE_G1_PESLOT2_RX_N5	B61	GND
A62	GND	B62	CPU0_PCIE_G1_PESLOT2_TX_N4_C
A63	GND	B63	CPU0_PCIE_G1_PESLOT2_TX_P4_C
A64	CPU0_PCIE_G1_PESLOT2_RX_P4	B64	GND
A65	CPU0_PCIE_G1_PESLOT2_RX_N4	B65	GND
A66	GND	B66	CPU0_PCIE_G1_PESLOT2_TX_N3_C
A67	GND	B67	CPU0_PCIE_G1_PESLOT2_TX_P3_C
A68	CPU0_PCIE_G1_PESLOT2_RX_P3	B68	GND
A69	CPU0_PCIE_G1_PESLOT2_RX_N3	B69	GND
A70	GND	B70	CPU0_PCIE_G1_PESLOT2_TX_N2_C
A71	GND	B71	CPU0_PCIE_G1_PESLOT2_TX_P2_C
A72	CPU0_PCIE_G1_PESLOT2_RX_P2	B72	GND
A73	CPU0_PCIE_G1_PESLOT2_RX_N2	B73	GND
A74	GND	B74	CPU0_PCIE_G1_PESLOT2_TX_N1_C
A75	GND	B75	CPU0_PCIE_G1_PESLOT2_TX_P1_C
A76	CPU0_PCIE_G1_PESLOT2_RX_P1	B76	GND
A77	CPU0_PCIE_G1_PESLOT2_RX_N1	B77	GND
A78	GND	B78	CPU0_PCIE_G1_PESLOT2_TX_N0_C
A79	GND	B79	CPU0_PCIE_G1_PESLOT2_TX_P0_C
A80	CPU0_PCIE_G1_PESLOT2_RX_P0	B80	GND
A81	CPU0_PCIE_G1_PESLOT2_RX_N0	B81	PESLOT1_X16_DETECT_L
A82	GND	B82	NG
A83	PE_SLOT_PRSNT_L	B83	VDD_33_RUN
A84	GND	B84	VDD_33_RUN
A85	PESLOT1_PEREFCLK_C_DN	B85	GND
A86	PESLOT1_PEREFCLK_C_DP	B86	VDD_33_DUAL
A87	GND	B87	GND
A88	CPU0_PCIE_G0_PESLOT2_RX_P23	B88	CPU0_PCIE_G0_PESLOT2_TX_P23_C
A89	CPU0_PCIE_G0_PESLOT2_RX_N23	B89	CPU0_PCIE_G0_PESLOT2_TX_N23_C
A90	GND	B90	GND
A91	CPU0_PCIE_G0_PESLOT2_RX_P22	B91	CPU0_PCIE_G0_PESLOT2_TX_P22_C
A92	CPU0_PCIE_G0_PESLOT2_RX_N22	B92	CPU0_PCIE_G0_PESLOT2_TX_N22_C
A93	GND	B93	GND
A94	CPU0_PCIE_G0_PESLOT2_RX_P21	B94	CPU0_PCIE_G0_PESLOT2_TX_P21_C
A95	CPU0_PCIE_G0_PESLOT2_RX_N21	B95	CPU0_PCIE_G0_PESLOT2_TX_N21_C

A96	GND	B96	GND
A97	CPU0_PCIE_G0_PESLOT2_RX_P20	B97	CPU0_PCIE_G0_PESLOT2_TX_P20_C
A98	CPU0_PCIE_G0_PESLOT2_RX_N20	B98	CPU0_PCIE_G0_PESLOT2_TX_N20_C
A99	GND	B99	GND
A100	CPU0_PCIE_G0_PESLOT2_RX_P19	B100	CPU0_PCIE_G0_PESLOT2_TX_P19_C
A101	CPU0_PCIE_G0_PESLOT2_RX_N19	B101	CPU0_PCIE_G0_PESLOT2_TX_N19_C
A102	GND	B102	GND
A103	CPU0_PCIE_G0_PESLOT2_RX_P18	B103	CPU0_PCIE_G0_PESLOT2_TX_P18_C
A104	CPU0_PCIE_G0_PESLOT2_RX_N18	B104	CPU0_PCIE_G0_PESLOT2_TX_N18_C
A105	GND	B105	GND
A106	CPU0_PCIE_G0_PESLOT2_RX_P17	B106	CPU0_PCIE_G0_PESLOT2_TX_P17_C
A107	CPU0_PCIE_G0_PESLOT2_RX_N17	B107	CPU0_PCIE_G0_PESLOT2_TX_N17_C
A108	GND	B108	GND
A109	CPU0_PCIE_G0_PESLOT2_RX_P16	B109	CPU0_PCIE_G0_PESLOT2_TX_P16_C
A110	CPU0_PCIE_G0_PESLOT2_RX_N16	B110	CPU0_PCIE_G0_PESLOT2_TX_N16_C
A111	GND	B111	GND
A112	P0_SFP_SMBUS_DATA	B112	PE1_SMB2_SCK
A113	P0_SFP_SMBUS_CLK	B113	PE1_SMB2_SDA
A114	GND	B114	VDD_12_RUN
A115	VDD_12_RUN	B115	VDD_12_RUN

PESLOT2 Connector

pin	net	pin	net
A1	GND	B1	VDD_12_RUN_PE
A2	VDD_12_RUN_PE	B2	VDD_12_RUN_PE
A3	VDD_12_RUN_PE	B3	VDD_12_RUN_PE
A4	GND	B4	GND
A5	SLOT2_HP_DATA	B5	PE2_SMB_SCK
A6	SLOT2_HP_CLK	B6	PE2_SMB_SDA
A7	NG	B7	GND
A8	NG	B8	VDD_33_RUN
A9	VDD_33_RUN	B9	NG
A10	VDD_33_RUN	B10	VDD_33_DUAL
A11	PESLOT2_PERST_L	B11	PESLOT2_WAKE_L
A12	GND	B12	NG
A13	PESLOT2_PEREFCLK_DP	B13	GND
A14	PESLOT2_PEREFCLK_DN	B14	CPU0_PCIE_G3_PESLOT1_TX_P0_C
A15	GND	B15	CPU0_PCIE_G3_PESLOT1_TX_N0_C
A16	CPU0_PCIE_G3_PESLOT1_RX_N0	B16	GND
A17	CPU0_PCIE_G3_PESLOT1_RX_P0	B17	NG
A18	GND	B18	GND
A19	NG	B19	CPU0_PCIE_G3_PESLOT1_TX_P1_C
A20	GND	B20	CPU0_PCIE_G3_PESLOT1_TX_N1_C
A21	CPU0_PCIE_G3_PESLOT1_RX_N1	B21	GND
A22	CPU0_PCIE_G3_PESLOT1_RX_P1	B22	GND
A23	GND	B23	CPU0_PCIE_G3_PESLOT1_TX_P2_C
A24	GND	B24	CPU0_PCIE_G3_PESLOT1_TX_N2_C

A25	CPU0_PCIE_G3_PESLOT1_RX_N2	B25	GND
A26	CPU0_PCIE_G3_PESLOT1_RX_P2	B26	GND
A27	GND	B27	CPU0_PCIE_G3_PESLOT1_TX_P3_C
A28	GND	B28	CPU0_PCIE_G3_PESLOT1_TX_N3_C
A29	CPU0_PCIE_G3_PESLOT1_RX_N3	B29	GND
A30	CPU0_PCIE_G3_PESLOT1_RX_P3	B30	NG
A31	GND	B31	NG
A32	PESLOT2_PEREFCLK_B_DP	B32	GND
A33	PESLOT2_PEREFCLK_B_DN	B33	CPU0_PCIE_G3_PESLOT1_TX_P4_C
A34	GND	B34	CPU0_PCIE_G3_PESLOT1_TX_N4_C
A35	CPU0_PCIE_G3_PESLOT1_RX_N4	B35	GND
A36	CPU0_PCIE_G3_PESLOT1_RX_P4	B36	GND
A37	GND	B37	CPU0_PCIE_G3_PESLOT1_TX_P5_C
A38	GND	B38	CPU0_PCIE_G3_PESLOT1_TX_N5_C
A39	CPU0_PCIE_G3_PESLOT1_RX_N5	B39	GND
A40	CPU0_PCIE_G3_PESLOT1_RX_P5	B40	GND
A41	GND	B41	CPU0_PCIE_G3_PESLOT1_TX_P6_C
A42	GND	B42	CPU0_PCIE_G3_PESLOT1_TX_N6_C
A43	CPU0_PCIE_G3_PESLOT1_RX_N6	B43	GND
A44	CPU0_PCIE_G3_PESLOT1_RX_P6	B44	GND
A45	GND	B45	CPU0_PCIE_G3_PESLOT1_TX_P7_C
A46	GND	B46	CPU0_PCIE_G3_PESLOT1_TX_N7_C
A47	CPU0_PCIE_G3_PESLOT1_RX_N7	B47	GND
A48	CPU0_PCIE_G3_PESLOT1_RX_P7	B48	NG
A49	GND	B49	GND
A50	NG	B50	CPU0_PCIE_G3_PESLOT1_TX_P8_C
A51	GND	B51	CPU0_PCIE_G3_PESLOT1_TX_N8_C
A52	CPU0_PCIE_G3_PESLOT1_RX_N8	B52	GND
A53	CPU0_PCIE_G3_PESLOT1_RX_P8	B53	GND
A54	GND	B54	CPU0_PCIE_G3_PESLOT1_TX_P9_C
A55	GND	B55	CPU0_PCIE_G3_PESLOT1_TX_N9_C
A56	CPU0_PCIE_G3_PESLOT1_RX_N9	B56	GND
A57	CPU0_PCIE_G3_PESLOT1_RX_P9	B57	GND
A58	GND	B58	CPU0_PCIE_G3_PESLOT1_TX_P10_C
A59	GND	B59	CPU0_PCIE_G3_PESLOT1_TX_N10_C
A60	CPU0_PCIE_G3_PESLOT1_RX_N10	B60	GND
A61	CPU0_PCIE_G3_PESLOT1_RX_P10	B61	GND
A62	GND	B62	CPU0_PCIE_G3_PESLOT1_TX_P11_C
A63	GND	B63	CPU0_PCIE_G3_PESLOT1_TX_N11_C
A64	CPU0_PCIE_G3_PESLOT1_RX_N11	B64	GND
A65	CPU0_PCIE_G3_PESLOT1_RX_P11	B65	GND
A66	GND	B66	CPU0_PCIE_G3_PESLOT1_TX_P12_C
A67	GND	B67	CPU0_PCIE_G3_PESLOT1_TX_N12_C
A68	CPU0_PCIE_G3_PESLOT1_RX_N12	B68	GND
A69	CPU0_PCIE_G3_PESLOT1_RX_P12	B69	GND
A70	GND	B70	CPU0_PCIE_G3_PESLOT1_TX_P13_C
A71	GND	B71	CPU0_PCIE_G3_PESLOT1_TX_N13_C
A72	CPU0_PCIE_G3_PESLOT1_RX_N13	B72	GND
A73	CPU0_PCIE_G3_PESLOT1_RX_P13	B73	GND

A74	GND	B74	CPU0_PCIE_G3_PESLOT1_TX_P14_C
A75	GND	B75	CPU0_PCIE_G3_PESLOT1_TX_N14_C
A76	CPU0_PCIE_G3_PESLOT1_RX_N14	B76	GND
A77	CPU0_PCIE_G3_PESLOT1_RX_P14	B77	GND
A78	GND	B78	CPU0_PCIE_G3_PESLOT1_TX_P15_C
A79	GND	B79	CPU0_PCIE_G3_PESLOT1_TX_N15_C
A80	CPU0_PCIE_G3_PESLOT1_RX_N15	B80	GND
A81	CPU0_PCIE_G3_PESLOT1_RX_P15	B81	PESLOT2_X16_DETECT_L
A82	GND	B82	NG
A83	NG	B83	VDD_33_RUN
A84	GND	B84	VDD_33_RUN
A85	PESLOT2_PEREFCLK_C_DP	B85	GND
A86	PESLOT2_PEREFCLK_C_DN	B86	VDD_33_DUAL
A87	GND	B87	GND
A88	CPU0_PCIE_G2_PESLOT2_RX_N16	B88	CPU0_PCIE_G2_PESLOT2_TX_P16_C
A89	CPU0_PCIE_G2_PESLOT2_RX_P16	B89	CPU0_PCIE_G2_PESLOT2_TX_N16_C
A90	GND	B90	GND
A91	CPU0_PCIE_G2_PESLOT2_RX_N17	B91	CPU0_PCIE_G2_PESLOT2_TX_P17_C
A92	CPU0_PCIE_G2_PESLOT2_RX_P17	B92	CPU0_PCIE_G2_PESLOT2_TX_N17_C
A93	GND	B93	GND
A94	CPU0_PCIE_G2_PESLOT2_RX_N18	B94	CPU0_PCIE_G2_PESLOT2_TX_P18_C
A95	CPU0_PCIE_G2_PESLOT2_RX_P18	B95	CPU0_PCIE_G2_PESLOT2_TX_N18_C
A96	GND	B96	GND
A97	CPU0_PCIE_G2_PESLOT2_RX_N19	B97	CPU0_PCIE_G2_PESLOT2_TX_P19_C
A98	CPU0_PCIE_G2_PESLOT2_RX_P19	B98	CPU0_PCIE_G2_PESLOT2_TX_N19_C
A99	GND	B99	GND
A100	CPU0_PCIE_G2_PESLOT2_RX_N20	B100	CPU0_PCIE_G2_PESLOT2_TX_P20_C
A101	CPU0_PCIE_G2_PESLOT2_RX_P20	B101	CPU0_PCIE_G2_PESLOT2_TX_N20_C
A102	GND	B102	GND
A103	CPU0_PCIE_G2_PESLOT2_RX_N21	B103	CPU0_PCIE_G2_PESLOT2_TX_P21_C
A104	CPU0_PCIE_G2_PESLOT2_RX_P21	B104	CPU0_PCIE_G2_PESLOT2_TX_N21_C
A105	GND	B105	GND
A106	CPU0_PCIE_G2_PESLOT2_RX_N22	B106	CPU0_PCIE_G2_PESLOT2_TX_P22_C
A107	CPU0_PCIE_G2_PESLOT2_RX_P22	B107	CPU0_PCIE_G2_PESLOT2_TX_N22_C
A108	GND	B108	GND
A109	CPU0_PCIE_G2_PESLOT2_RX_N23	B109	CPU0_PCIE_G2_PESLOT2_TX_P23_C
A110	CPU0_PCIE_G2_PESLOT2_RX_P23	B110	CPU0_PCIE_G2_PESLOT2_TX_N23_C
A111	GND	B111	GND
A112	P0_SFP_SMBUS_DATA	B112	PE2_SMB2_SCK
A113	P0_SFP_SMBUS_CLK	B113	PE2_SMB2_SDA
A114	GND	B114	VDD_12_RUN
A115	VDD_12_RUN	B115	VDD_12_RUN

2.5 LED Definitions

BMC_HBLED	BMC Heart Beat LED	**Pin**	**Signal**	
		+	VDD_33_DUAL	
		-	N18131759	
		State	**Description**	
		OFF	OFF	The LED shuts off when the BMC controller cannot be detected or properly initiated.
		Blinking	Green	The LED blinks per second to indicate that the BMC controller is working normally
LED4	P0_PROCHOT_LED	**Pin**	**Signal**	
		+	VDD_33_DUAL	
		-	N34667495	
		State	**Description**	
		OFF	OFF	HW Sensor status is normal
		ON	Red	HW Sensor status is abnormal.
LED5	PWR_GOOD_LED	**Pin**	**Signal**	
		+	VDD_33_DUAL	
		-	N34667528	
		State	**Description**	
		OFF	OFF	System all power is not OK;
		ON	Green	System all power ok
LED7	RESET_LED	**Pin**	**Signal**	
		+	VDD_33_DUAL	
		-	N34667581	
		State	**Description**	
		OFF	OFF	The LED shuts off when the BMC controller cannot be detected or properly initiated.
		ON	Green	The LED lights up when BMC was reset OK;
LED_M1	NGFF1_LED	**Pin**	**Signal**	
		+	VDD_33_RUN	
		-	NGFF1_LED_L	
		State	**Description**	
		OFF	OFF	The LED shuts off when no NGFF1 SSD insert
		Blinking	Green	The LED blinks when SSD working;

LED_M2	NGFF2_LED	**Pin**	**Signal**	
		+	VDD_33_RUN	
		-	NGFF2_LED_L	
		State	**Description**	
		OFF	OFF	The LED shuts off when no NGFF2 SSD insert
		Blinking	Green	The LED blinks when SSD working;
HDD_LED3	HDD_ACT_LED	**Pin**	**Signal**	
		+	VDD_33_RUN	
		-	HDD_ACT_LED_N	
		State	**Description**	
		OFF	OFF	NGFF Active LED off
		ON	Green	NGFF Active LED on
IPMI_LED2	On board BMC IPMI ALERT LED	**Pin**	**Signal**	
		+	VDD_33_DUAL	
		-	BMC_HW_FAULT_N	
		State	**Description**	
		OFF	OFF	HW Sensor status is normal
		ON	ORG	HW Sensor status is abnormal.
PSMI_LED1	PSU_ALERT_N LED	**Pin**	**Signal**	
		+	VDD_33_DUAL	
		-	N18825566	
		State	**Description**	
		OFF	OFF	PSU status is abnormal
		ON	ORG	PSU status is normal
ID_LED2	ID_LED	**Pin**	**Signal**	
		+	VDD_33_DUAL	
		-	REAR_ID_LED_N	
		State	**Description**	
		OFF	OFF	Not ID
		ON	BLUE	ID_LED

2.6 Installing the Processor and Heatsink

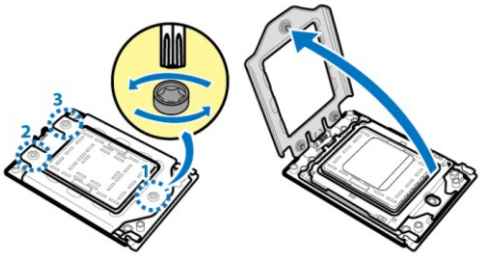
The types of processors supported by the S8036 are listed in the ***1.2 Hardware*** Specifications section on page 4. Check our website at **http://www.tyan.com** for the latest list of validated **AMD®** processors for this specific motherboard.

> **NOTE:** MiTAC is not liable for damage as a result of operating an unsupported configuration.

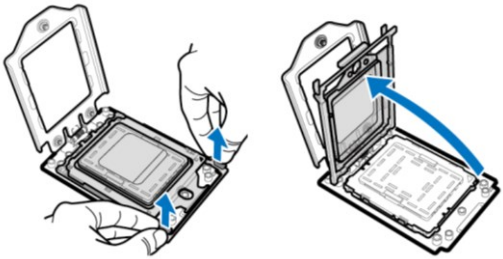
Processor Installation (Single Socket / for AMD® EPYC™ 7002/7003 Series CPU)

Follow the steps below to install the processors and heat sinks.
Please note that the illustrations are based on socket which may not look exactly like the motherboard you purchased. Therefore, the illustrations should be held for your reference only.
NOTE: Please save and replace the flip CPU protection cap when returning for service.

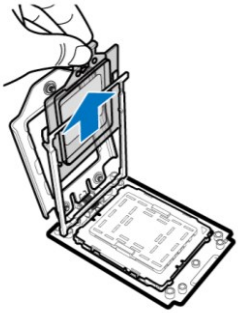
1. Use a T20 Torx screwdriver to loosen the screws securing the force frame in a sequential order(3->2->1).Note: The force frame will automatically eject after the captive screws are being released.



2. By placing your both index fingers on the sides on the metal handle, pull to release the rail frame. Then lift the rail frame to its fully open position.



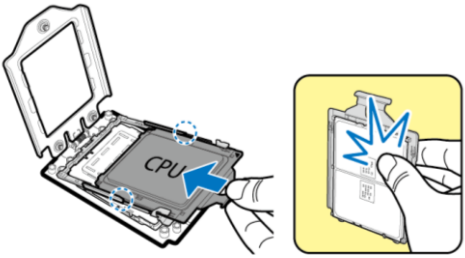
3. Remove the external cap from the rail frame.



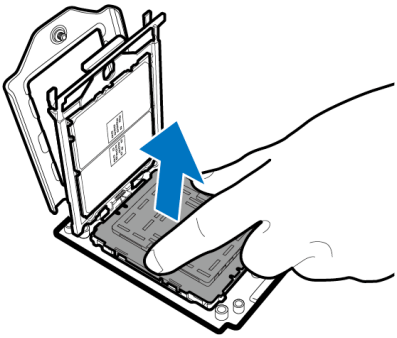
4. Align and install the carrier frame with package into the slot on the rail frame. Note: During installation, observe the following:

   -) make sure to push the carrier frame with package towards the end of the rail frame until it clicks in place.

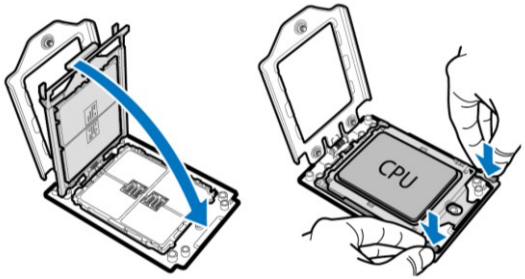
   -) do not drop the carrier frame or touch the package pad to avoid component damage.



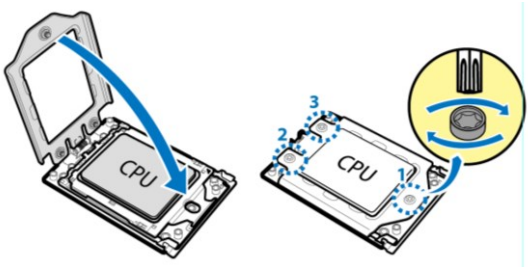
5. Using your thumbs and forefinger, remove the PnP cap by lifting it up vertically.



6. Carefully close the rail frame with the installed package. Then push both edges of the rail frame firmly until it locks in place.



7. Close the force frame. Then use a T20 Torx screwdriver to tighten the screws to secure the force frame in a sequential order (1->2->3).



Heat sink Installation

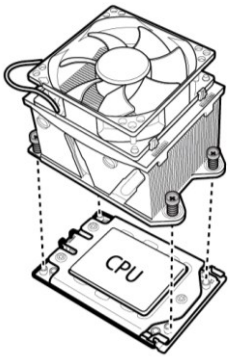
After installing the processor, you will need to proceed to install the heat sink. The CPU heat sink will ensure that the processor do not overheat and continue to operate at maximum performance for as long as you own them. An overheated processor is dangerous to the motherboard. The processors will overheat within seconds, enter thermal protection, and shut down if heatsinks are not installed.

Caution：Take caution of the air flow must be in the direction which paralleled with memories.

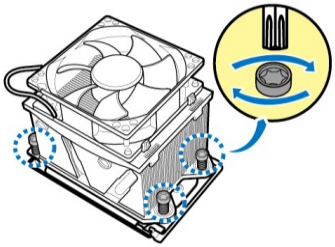
For the safest method of installation and information on choosing the appropriate heat sink, using heat sinks validated by **AMD®**. Please refer to the AMD® website: **http://www.amd.com**

The following diagram illustrates how to install the heatsink on the AMD® CPU Socket:

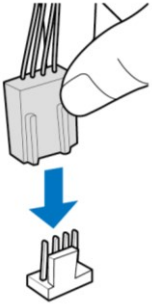
1. Align and install the CPU heatsink onto the top of the CPU socket.



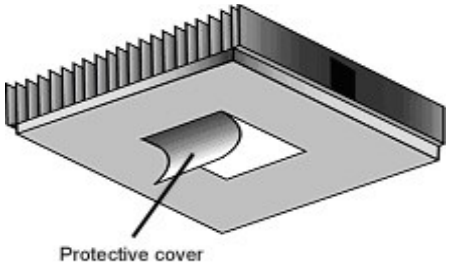
2. Use a T20 Torx screwdriver to tighten the heatsink screws.



3. Connect the heatsink power cable to the mainboard connector.

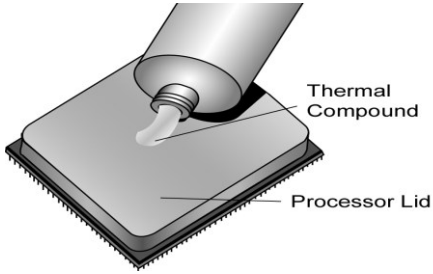


2.7 Thermal Interface Material



There are two types of thermal interface materials designed for use with the processors.

The most common material comes as a small pad attached to the heat sink at the time of purchase. There should be a protective cover over the material. Take care not to touch this material. Simply remove the protective cover and place the heat sink on the processor.

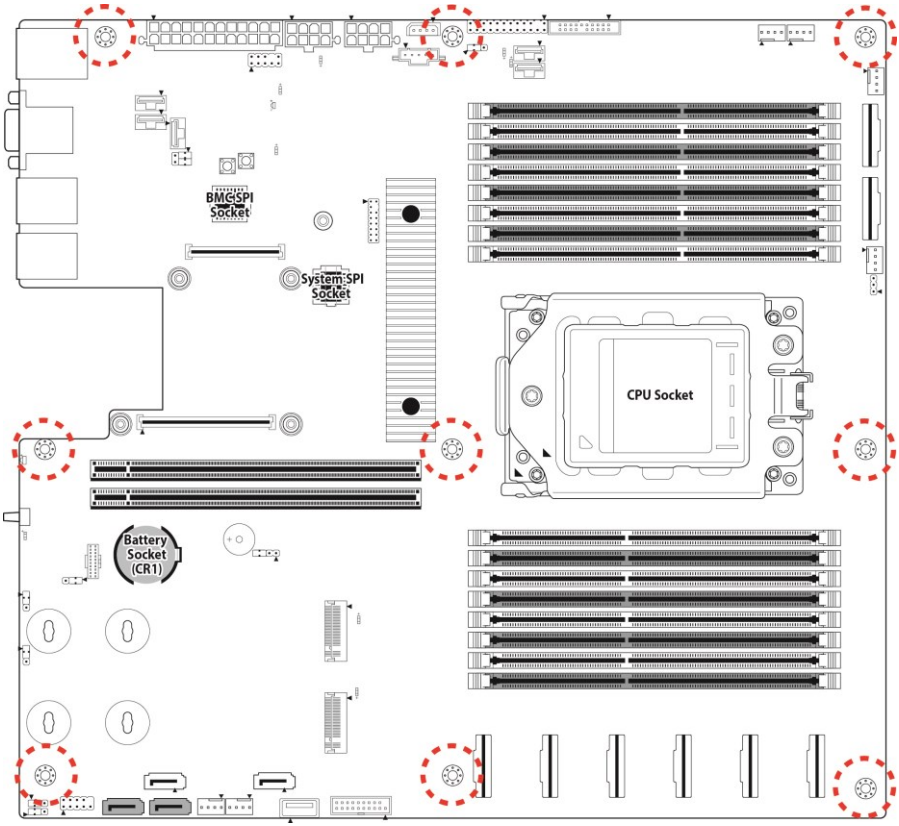


The second type of interface material is usually packaged separately. It is commonly referred to as 'thermal compound'. Simply apply a thin layer on to the CPU lid (applying too much will actually reduce the cooling).

NOTE: Always check with the manufacturer of the heat sink & processor to ensure that the thermal interface material is compatible with the processor and meets the manufacturer's warranty requirements.

2.8 Tips on Installing Motherboard in Chassis

Before installing your motherboard, make sure your chassis has the necessary motherboard support studs installed. These studs are usually metal and are gold in color. Usually, the chassis manufacturer will pre-install the support studs. If you are unsure of stud placement, simply lay the motherboard inside the chassis and align the screw holes of the motherboard to the studs inside the case. If there are any studs missing, you will know right away since the motherboard will not be able to be securely installed.

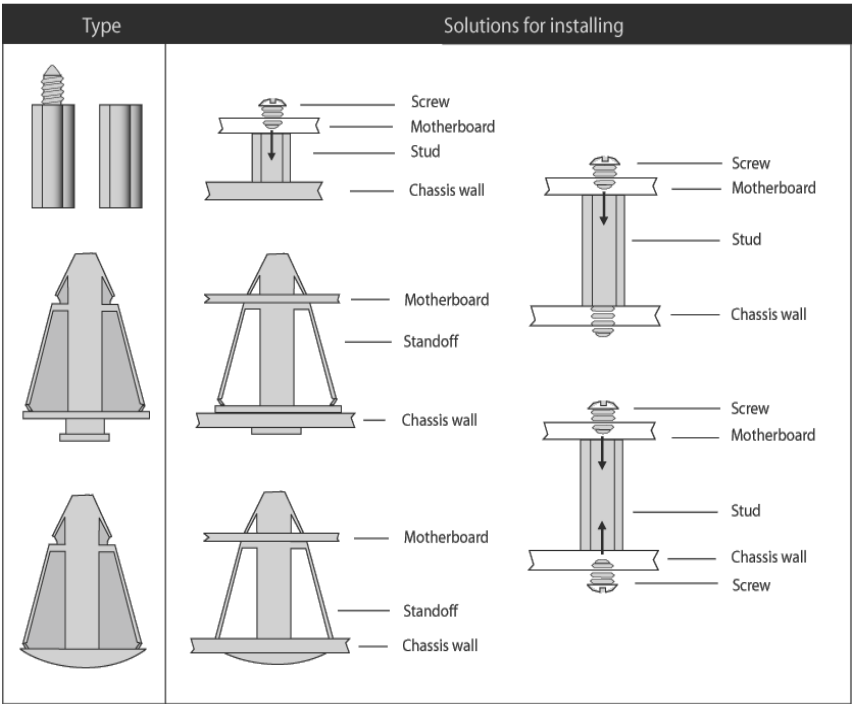


Note: Be especially careful to look for extra stand-offs. If there are any stand-offs present that are not aligned with a mounting hole on the motherboard, it will likely short components on the back of the motherboard when installed. This will cause malfunction and/or damage to your motherboard.

Some chassis include plastic studs instead of metal. Although the plastic studs are usable, MiTAC recommends using metal studs with screws that will fasten the motherboard more securely in place.

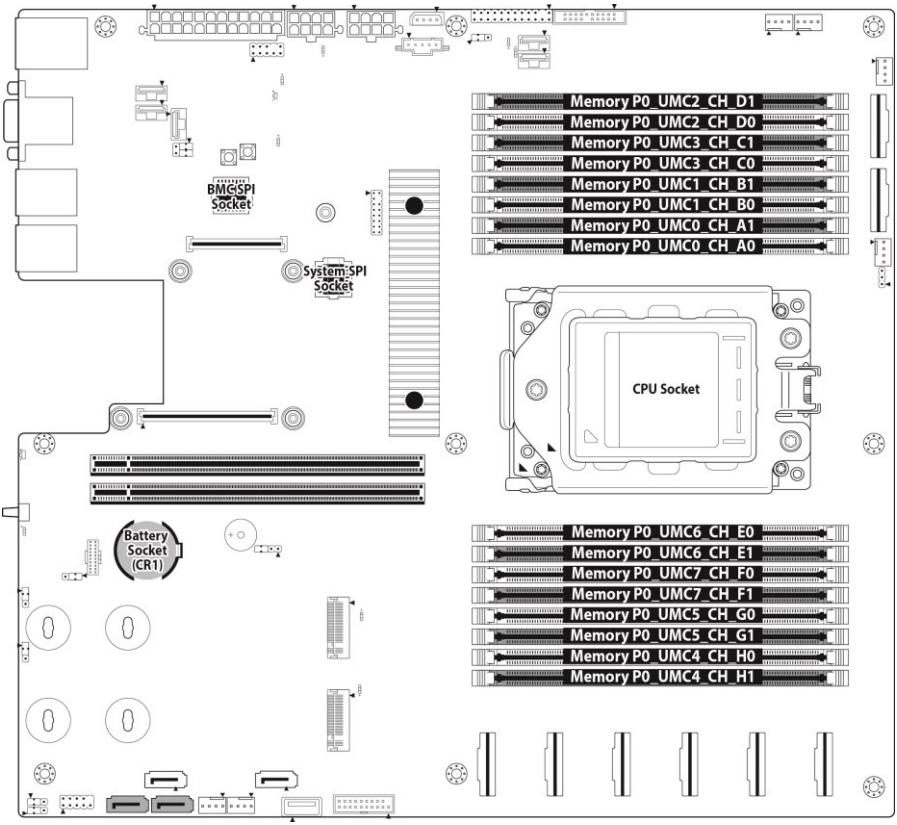
Below is a chart detailing what the most common motherboard studs look like and how they should be installed.

Mounting the Motherboard



2.9 Installing the Memory

Before installing memory, ensure that the memory you have is compatible with the motherboard and processor. Check the TYAN Web site at **http://www.tyan.com** for details of the type of memory recommended for your motherboard.



- Support (16)DDR4 288-pin DIMM slots(L)R DDR4 3200 Mhz w/ECC 1.2V,
- RDIMM DDR4 3200 Mhz w/ECC Up to 1TB RDIMM
- LRDIMM DDR4 3200 Mhz w/ECC Up to 4TB RDIMM
- 3DS DDR4 3200 w/ECC Up to 4TB RDIMM
- Support (8) memory channels per CPU
- Support (2) DIMM slots per CPU channel

Recommended Memory Population Table (Single CPU)

CPU Installed	Quantity of memory installed							
	2	4	6	8	10	12	14	16
P0_D0_Umc2_Ch_D1	√	√	√	√	√	√	√	√
P0_D0_Umc2_Ch_D0					√	√	√	√
P0_D0_Umc3_Ch_C1		√	√	√	√	√	√	√
P0_D0_Umc3_Ch_C0					√	√	√	√
P0_D1_Umc1_Ch_B1			√	√	√	√	√	√
P0_D1_Umc1_Ch_B0					√	√	√	√
P0_D1_Umc0_Ch_A1				√	√	√	√	√
P0_D1_Umc0_Ch_A0					√	√	√	√
P0_D3_Umc6_CH_E0					√	√	√	√
P0_D3_Umc6_CH_E1				√	√	√	√	√
P0_D3_Umc7_CH_F0						√	√	√
P0_D3_Umc7_CH_F1			√	√		√	√	√
P0_D2_Umc5_CH_G0							√	√
P0_D2_Umc5_CH_G1		√	√	√			√	√
P0_D2_Umc4_CH_H0								√
P0_D2_Umc4_CH_H1	√	√	√	√				√

NOTE:

1.√ indicates a populated DIMM slot.

2. Use paired memory installation for max performance.

3. Populate the same DIMM type in each channel, specifically

- Use the same DIMM size
- Use the same # of ranks per DIMM

4. Dual-rank DIMMs are recommended over single-rank DIMMs.

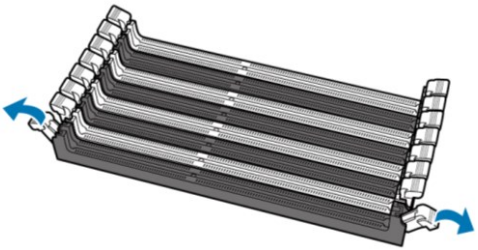
5. Un-buffered DIMM can offer slightly better performance than registerd DIMM if populating only a single DIMM per channel.

	DIMM Population / Chan[2]		DDR4 Frequency MT/s	
DIMM Type[3]	DIMM 0	DIMM 1	Rome/Milan in legacy platform[4]	Rome/Milan in optimized platform[4]
1	-	1R	2666	3200
	1R	1R	2133	2933
	-	2R or 2DR	2400	3200
	1R	2R or 2DR	2133	2933
	2R or 2DR	2R or 2DR	2133	2933
2	-	4DR	2666	3200
	4DR	4DR	2133	2933

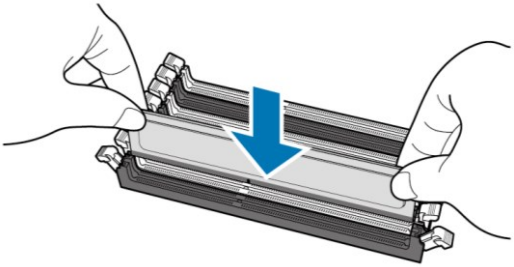
Memory Installation Procedure

Follow these instructions to install memory modules into the S8036.

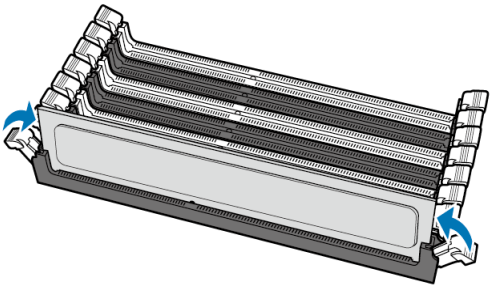
1. Unlock a DIMM socket by Press the retaining clip outwardly in the following illustration.



2. Align the memory module with the socket，such that the DIMM NOTCH match the KEY SLOT on the socket.



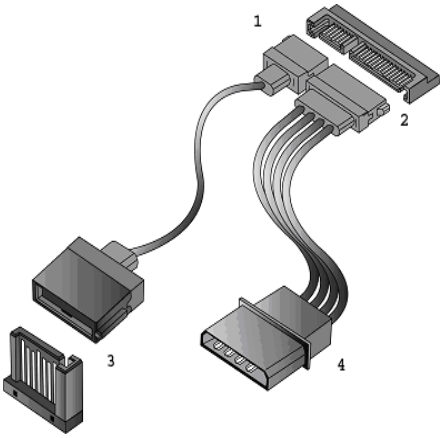
3. Seat the module firmly into the socket by gently pressing down until it sits flush with the socket. The locking levers pop up into place.



2.10 Attaching Drive Cables

Attaching SATA Cables

The following illustrates how to make a SATA Cable connection. If you are in need of SATA/SAS cables or power adapters please contact your local sales representative.



1. SATA drive cable connection

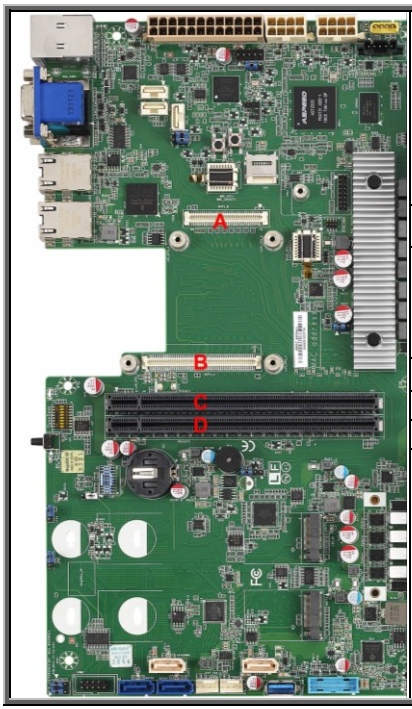
2. SATA drive power connection

3. SATA cable motherboard connector

4. SATA drive power adapter

2.11 Installing Add-In Cards

Before installing add-in cards, it's helpful to know if they are fully compatible with your motherboard. For this reason, we've provided the diagrams below, showing the slots that may appear on your motherboard.



A: OCP B slot (OCP1_B)

B: OCP A slot (OCP1_A)

C: PCIE 3.0 SLOTx24 (PESLOT1)

D: PCIE 3.0 SLOTx24 (PESLOT2)

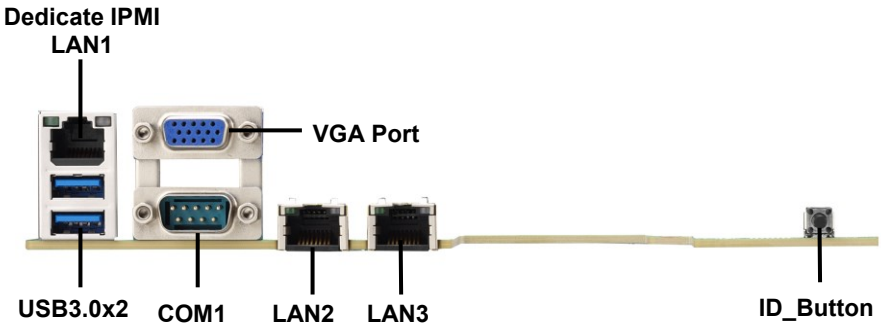
Simply find the appropriate slot for your add-in card and insert the card firmly. Do not force any add-in cards into any slots if they do not seat in place. It is better to try another slot or return the faulty card rather than damaging both the motherboard and the add-in card.

TIP: It's a good practice to install add-in cards in a staggered manner rather than making them directly adjacent to each other. Doing so allows air to circulate within the chassis more easily, thus improving cooling for all installed devices.

NOTE: You must always unplug the power connector from the motherboard before performing system hardware changes to avoid damaging the board or expansion device.

2.12 Connecting External Devices

Connecting external devices to the motherboard is an easy task. The motherboard supports a number of different interfaces through connecting peripherals. See the following diagrams for the details.



NOTE: RJ45 (1Gb) LAN1 is from Realtek RTL8211E chipset. RJ45 (1Gb) LAN2/LAN3 is from Broadcom 5720 chipset.

Onboard LAN LED Color Definition

The **Three (3)** onboard Ethernet ports have green and Amber LEDs to indicate LAN status. The chart below illustrates the different LED states.

1Gbps LAN Link/Activity LED Scheme			
Description		**Left LED (Link/Activity)**	**Right LED (Speed)**
No Link		OFF	OFF
10 Mbps	**Link**	Green	OFF
	Active	Blinking Green	OFF
100 Mbps	**Link**	Green	Solid Green
	Active	Blinking Green	Solid Green
1Gbps	**Link**	Green	Solid Amber
	Active	Blinking Green	Solid Amber

2.13 Installing the Power Supply

There are **Three (3)** power connectors on your S8036 motherboard. The S8036 supports EPS 12V power supply.

PWR1: ATX 24-Pin Power Connector

Signal	Pin	Pin	Signal
+3.3V_1	1	13	+3.3V_4
+3.3V_2	2	14	-12V
COM_1	3	15	COM_4
+5V_1	4	16	PS-ON#
COM_2	5	17	COM_5
+5V_2	6	18	COM_6
COM_3	7	19	COM_7
PWR_OK	8	20	RES
5VSB	9	21	+5V_3
+12V_1	10	22	+5V_4
+12V_2	11	23	+5V_5
+3.3V_3	12	24	COM_8

PWR2/PWR3: 8-pin CPU0 Power Connector

Signal	Pin	Pin	Signal
GND	1	5	+12VA1
GND	2	6	+12VA1
GND	3	7	+12VA1
GND	4	8	+12VA1

2.14 Finishing Up

Congratulations on making it this far! You have finished setting up the hardware aspect of your computer. Before closing up your chassis, make sure that all cables and wires are connected properly, especially SATA cables and most importantly, jumpers. You may have difficulty powering on your system if the motherboard jumpers are not set correctly.

In the rare circumstance that you have experienced difficulty, you can find help by asking your vendor for assistance. If they are not available for assistance, please find setup information and documentation online at our website or by calling your vendor's support line.

Chapter 3: BIOS Setup

3.1 About the BIOS

The BIOS is the basic input/output system, the firmware on the motherboard that enables your hardware to interface with your software. The BIOS determines what a computer can do without accessing programs from a disk. The BIOS contains all the code required to control the keyboard, display screen, disk drives, serial communications, and a number of miscellaneous functions. This chapter describes the various BIOS settings that can be used to configure your system.

The BIOS section of this manual is subject to change without notice and is provided for reference purposes only. The settings and configurations of the BIOS are current at the time of print and are subject to change, and therefore may not match exactly what is displayed on screen.

This section describes the BIOS setup program. The setup program lets you modify basic configuration settings. The settings are then stored in a dedicated, battery-backed memory (called NVRAM) that retains the information even when the power is turned off.

To start the BIOS setup utility:

1. Turn on or reboot your system.
2. Press <**F2**> or <**Del>** during POST (<**Tab**> on remote console) to start the BIOS setup utility.

3.1.1 Setup Basics

The table below shows how to navigate in the setup program using the keyboard.

Key	Function
↑↓→←	Move cursor
<Enter>	Execute command or select submenu
<->/<+>	Select the previous or next value/setting of the field
<ESC>	Exit current menu
<F1>	General help
<F2>	Previous values
<F3>	Load the Optimal default configuration values of the menu
<F4>	Save and exit
<K>	Scroll help area upwards
<M>	Scroll help area downwards
<PgUp> / <PgDn>	Move cursor to next/previous page

3.1.2 Getting Help

Pressing [**F1**] will display a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press [**ESC**] or the [**Enter**] key again.

3.1.3 In Case of Problems

If you have trouble booting your computer after making and saving the changes with the BIOS setup program, you can restart the computer by holding the power button down until the computer shuts off (usually within 4 seconds); resetting by pressing CTRL-ALT-DEL; or clearing the CMOS.
The best advice is to only alter settings that you thoroughly understand. In particular, do not change settings in the Chipset section unless you are absolutely sure of what you are doing. The Chipset defaults have been carefully chosen either by MiTAC or your system manufacturer for best performance and reliability. Even a seemingly small change to the Chipset setup options may cause the system to become unstable or unusable.

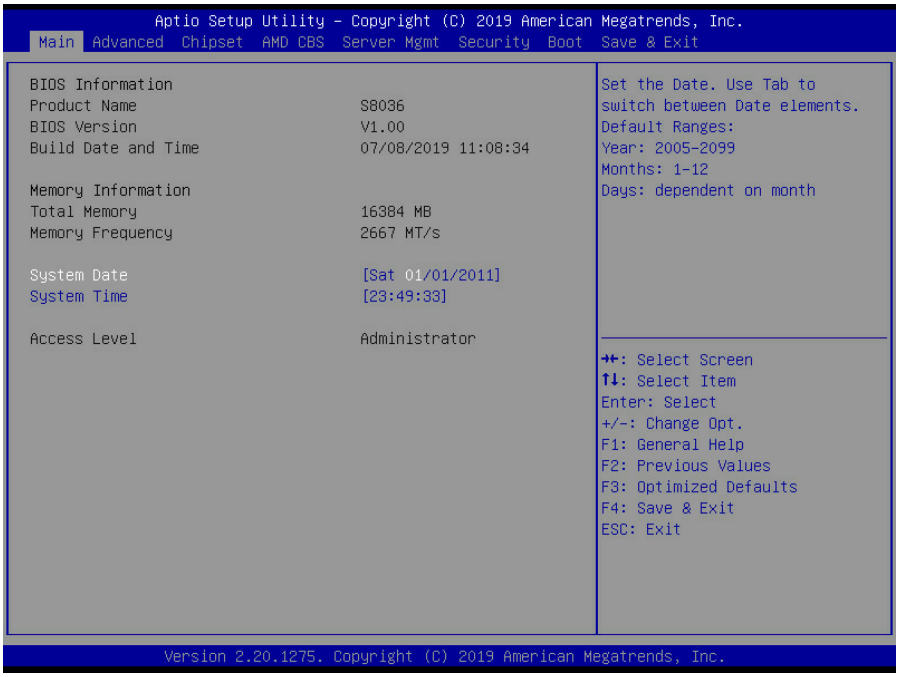
3.1.4 Setup Variations

Not all systems have the same BIOS setup layout or options. While the basic look and function of the BIOS setup remains more or less the same for most systems, the appearance of your Setup screen may differ from the charts shown in this section. Each system design and chipset combination requires a custom configuration. In addition, the final appearance of the Setup program depends on the system designer. Your system designer may decide that certain items should not be available for user configuration, and remove them from the BIOS setup program.

NOTE: The following pages provide the details of BIOS menu. Please be aware that the BIOS menus are continually changing due to continual BIOS updates over the product lifespan of the motherboard. The BIOS menus provided are current as of the date when this manual was written. Please visit TYAN's website at http://www.tyan.com for information on BIOS updates available for this specific motherboard.

3.2 Main Menu

In this section, you can alter general features such as the date and time.
Note that the options listed below are for options that can directly be changed within the Main Setup screen.



BIOS Information
It displays BIOS related information.

Product Name
It displays Product information.

BIOS Version
It displays BIOS version information

Build Date and Time
It displays the time when built

Memory Information
It displays the total memory size.

Memory Frequency
It displays Memory frequency

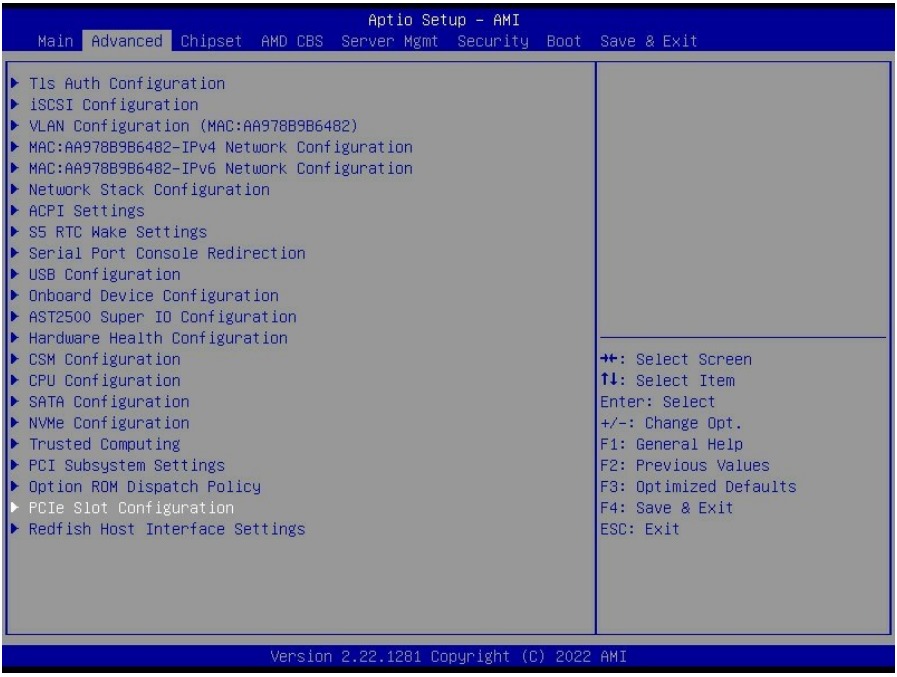
System Date
Set the Date. Use Tab to switch between Date elements. Default Ranges:
Year: 2005-2099
Months: 1-12
Days: dependent on month

System Time
Adjust the system clock.
HH (24 hours format): MM (Minutes): SS (Seconds)

Access Level
Adminstrator

3.3 Advanced Menu

This section facilitates configuring advanced BIOS options for your system.



Tls Auth Configuration
Press <Enter> to select Tls Auth Configuration.

iSCSI Configuration
Configure the iSCSI parameters

VLAN Configuration(MAC:AA978B9B6482)
VLAN Configuration(MAC:AA978B9B6482)

MAC:AA978B9B6482-IPv4 Network Configuration
Configure network parameters. (MAC:AA978B9B6482)

MAC:AA978B9B6482-IPv6 Network Configuration
Configure network parameters. (MAC:AA978B9B6482)

Network Stack Configuration
Network Stack Settings

ACPI Settings
System ACPI Parameters

S5 RTC Wake Settings
S5 RTC Wake Settings

Serial Port Console Redirection
Serial Port Console Redirection

USB Configuration
USB Configuration Parameters

Onboard Device Configuration
Onboard Device and Function Configuration.

AST2500 Super IO Configuration
AST2500 Super IO Configuration

Hardware Health Configuration
Hardware Health Configuration

CSM Configuration
CSM Configuration, Enable/Disable Option ROM execution setting, etc

CPU Configuration
CPU Configuration parameters

SATA Configuration
SATA Device Information

NVMe Configuration
NVMe Device Options settings

Trusted Computing
Trusted Computing settings.

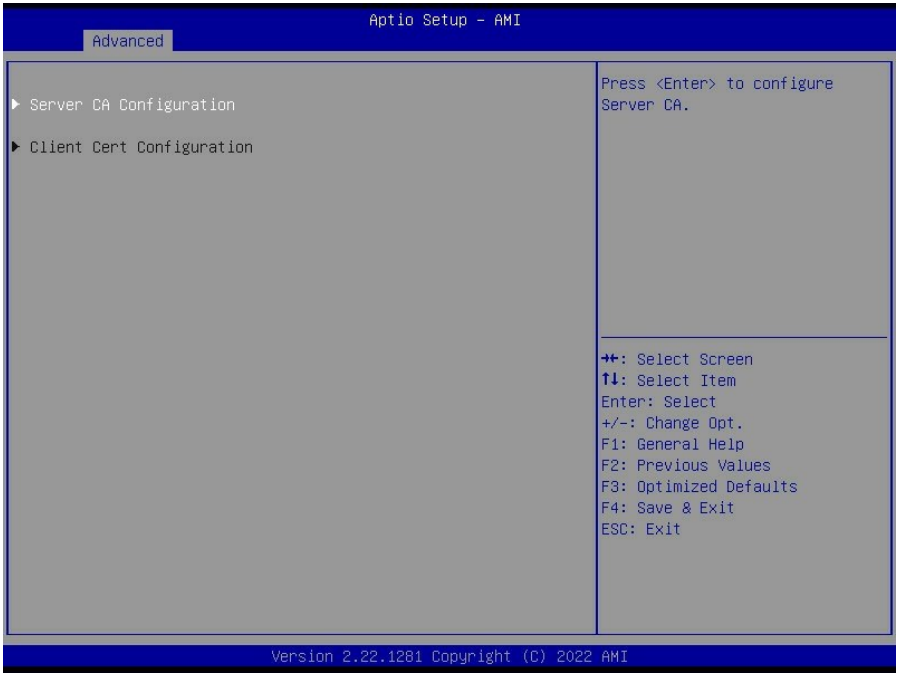
PCI Subsystem Settings
PCI, PCI-X and PCI Express Settings

Option ROM Dispatch Policy
Option ROM Dispatch Policy

PCIE Slot Configuration
Onboard PCIE Slot Configuration

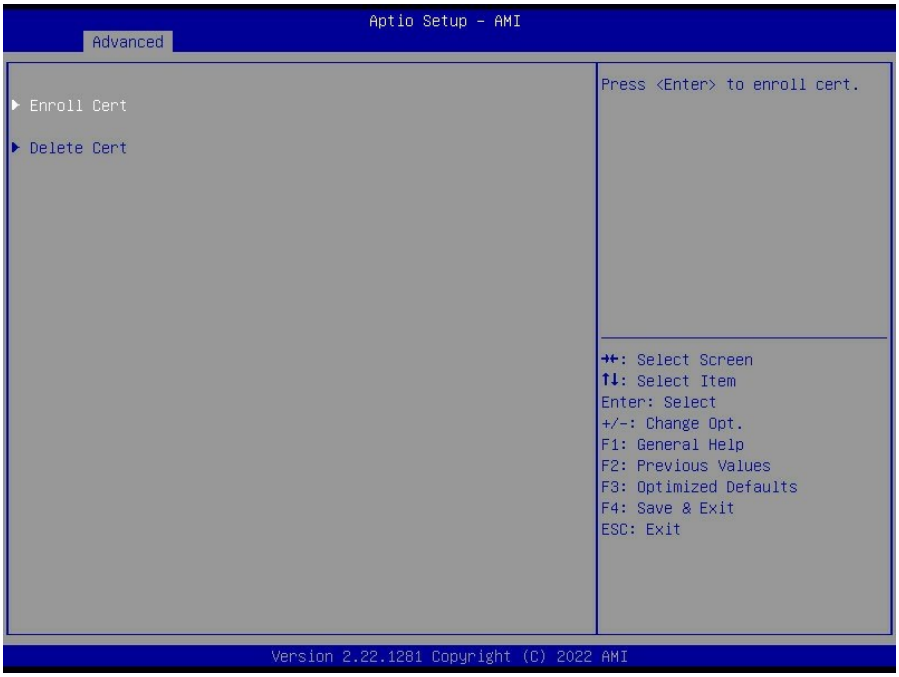
Redfish Host Interface Settings
Redfish Host Interface Parameters

3.3.1 Tls Configuration



Server CA Configuration
Press <Enter> to configure Server CA.

3.3.1.1 Tls Auth Configuration



Enroll Cert
Press <Enter> to enroll cert.

Delete Cert
Press <Enter> to delete cert.

3.3.1.1.1 Enroll Cert Configuration

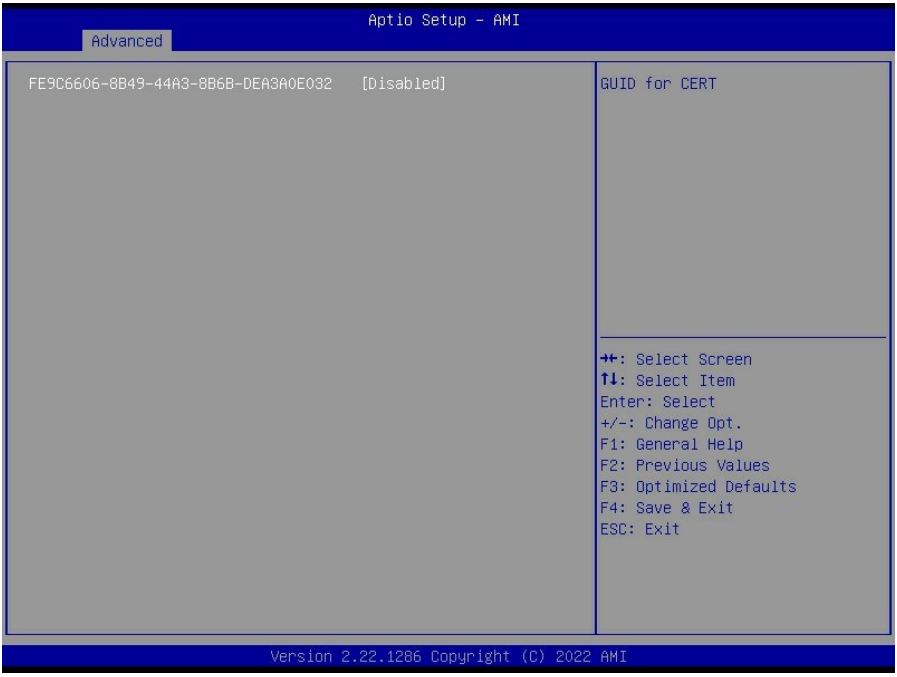
Enroll Cert Using File
Enroll Cert Using File

Cert GUID
Input digit character in 11111111-2222-3333-4444-1234567890ab format.

Commit Changes and Exit
Commit Changes and Exit

Discard Changes and Exit
Discard Changes and Exit

3.3.1.1.2 Delete Cert Configuration

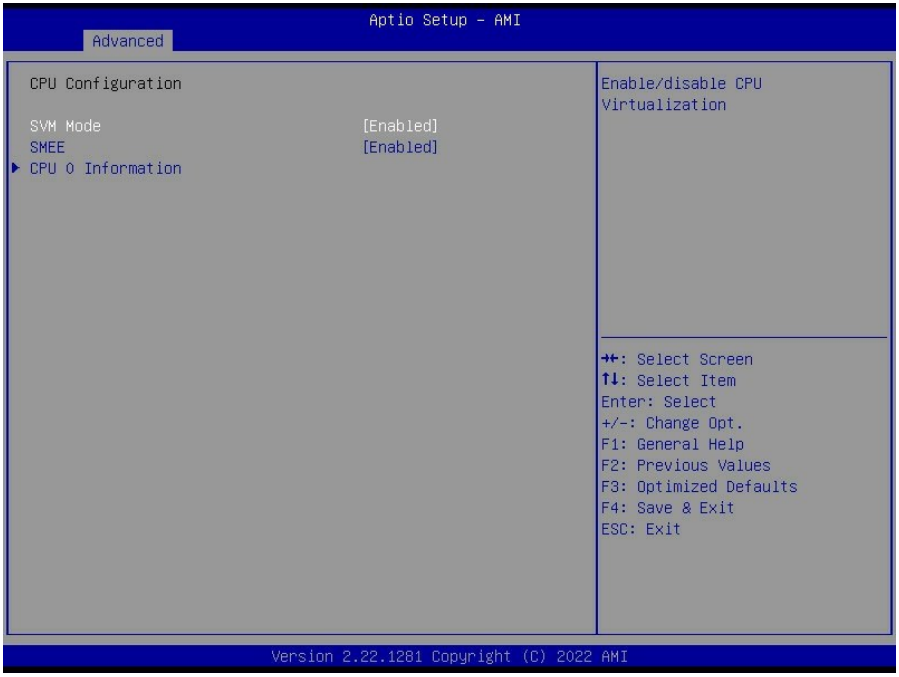


FEXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXX

GUID for CERT

Disabled / Enabled

3.3.1 CPU Configuration



SVM Mode
Enable/disable CPU virtulization.
Disabled / **Enabled**

SMEE
Control secure memory encryption enable
Disabled / **Enabled**

CPU 0 Information
View Information related to CPU 0

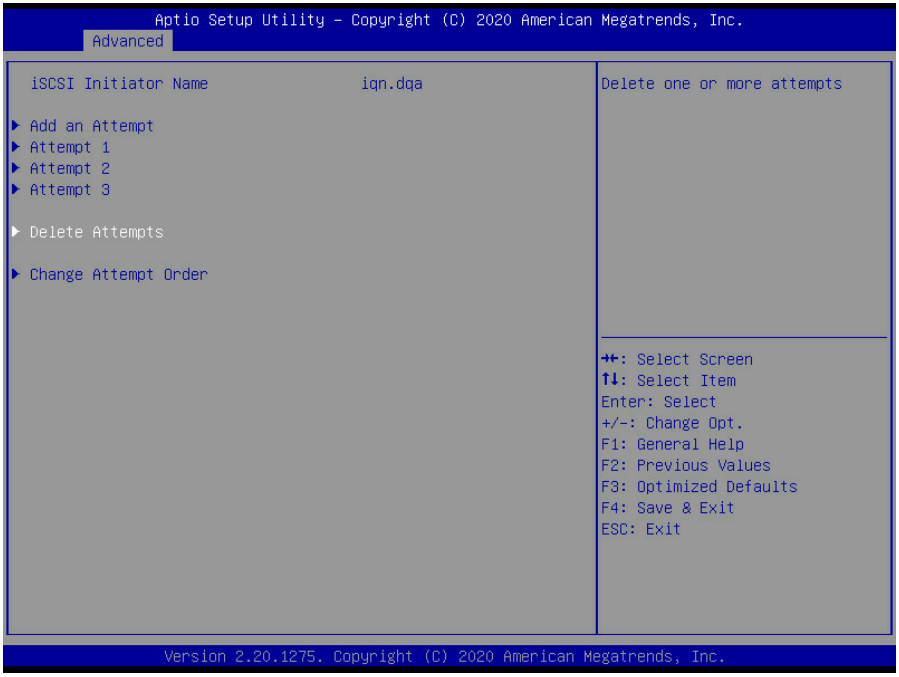
3.3.1.1 CPU0 Information

```
Aptio Setup - AMI
Advanced

CPU 0 Information

AMD EPYC 7313 16-Core Processor
16 Cores 32 Threads
Running @ 3023 MHz  1100 mV
Processor Family: 19h
Processor Model: 00h-0Fh
Microcode Patch Level: A00115D

--------- Cache per Core ---------
L1 Instruction Cache: 32 KB/8-way
       L1 Data Cache: 32 KB/8-way
            L2 Cache: 512 KB/8-way

 L3 Cache per Socket: 128 MB/16-way

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

Version 2.22.1281 Copyright (C) 2022 AMI
```

3.3.2 ISCSI Initiator Configuration

Host iSCSI Configuration
Host iSCSI Configuration settings

3.3.2.1 Host iSCSI Configuration



Please follow the instructions to initiate the iSCSI function.
Step 1.
Select **Advanced** → **CSM Configuration** → **Network** → [UEFI].
Step 2.
Select **Advanced** → **Network Stack Configuration** → **Network Stack** → [Enabled]
Step 3.
Save changes and reboot.

iSCSI Initiator Name

The worldwide unique name of iSCSI Initiator. Only IQN format is accepted. Range is from 4 to 223.

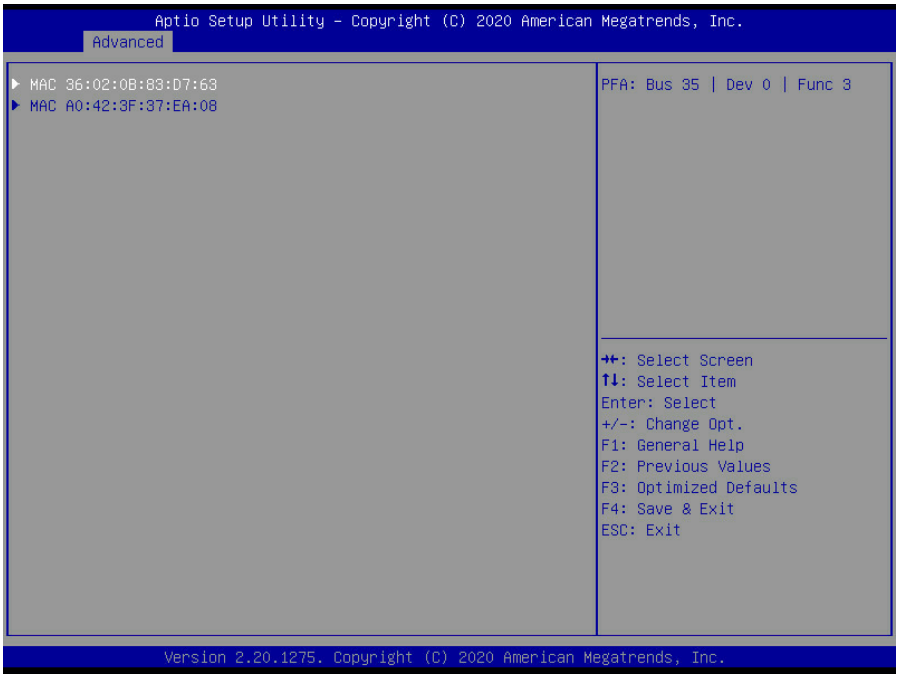
Add an Attempt
Add one or more attempts

Attempt 1
Attempt 2
Attempt 3

Delete Attempts
Delete one or more attempts

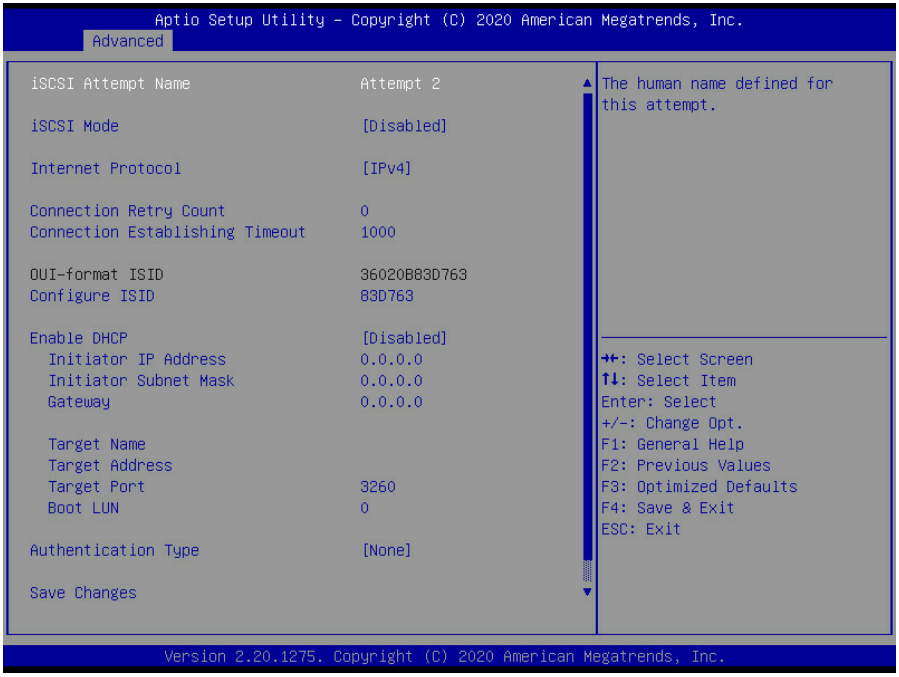
Change Attempt Order
Change attempt sequence

3.3.2.2 Add an Attempt



Read only.

3.3.2.2.1 MAC 36:02:0B:83:D7:63



iSCSI Mode
Disabled, Enabled, Enabled for MPIO.

Disabled / Enabled / Enabled for MPIO

Internet Protocol
Initiator IP address is system assigned in IP6 mode. In Autoconfigure mode, iSCSI driver will attempt to connect iSCSI target via IPv4 stack, if failed then attempt IPv6 stack.

IPv4 / IPv6 / Autoconfigure

Connection Retry Count
The minimum value is 0 and the maximum is 16. 0 means no retry.

Connection Establishing Timeout
The timeout value in milliseconds. The minimum value is 100 milliseconds and the maximum is 20 seconds.

Configure ISID
OUI-format ISID in 6 bytes, default value is derived from MAC address. Only last 3 bytes are configurable. Example: update 0ABBCCDDEEFF to OABBCCF07901 by input F07901.

Enable DHCP
Enable DHCP.
Disabled / Enabled

Initiator IP Address
Enter IP address in dotted-decimal notation.

Initiator Subnet Mask
Enter IP address in dotted-decimal notation.

Gateway
Enter IP address in dotted-decimal notation.

Target Name
The worldwide unique name of the target. Only iqn. format is accepted. Range is from 4 to 223
iqu. xxx

Target Address
Enter Target address in IPv4, IPv6 or URL format. You need to configure DNS server address in advance if input a URL string.

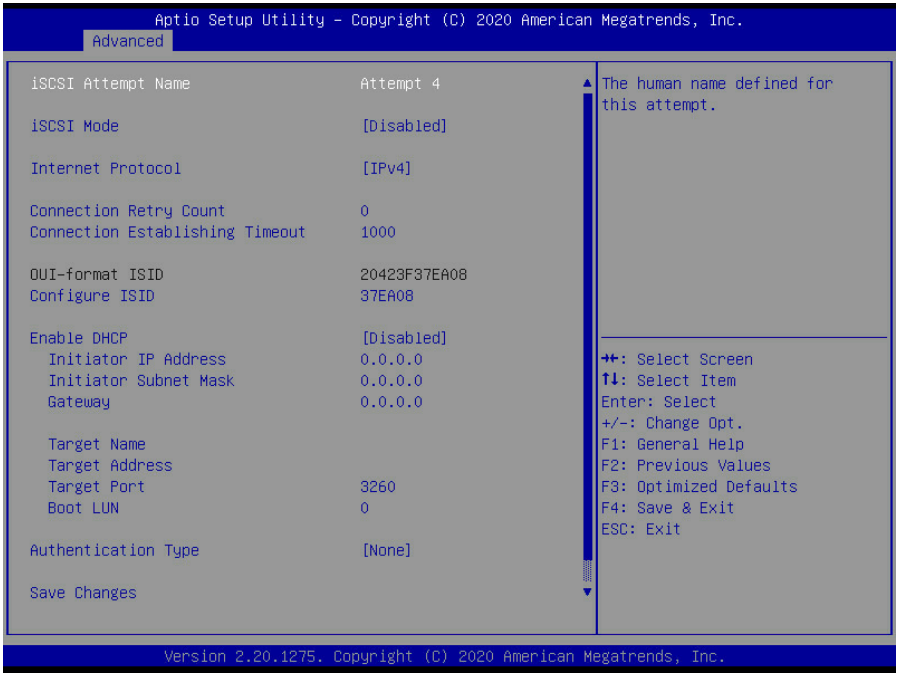
Target Port
Target Port.

Boot LUN
Hexadecimal representation of the LU number. Examples are: 4752-3A4F-6b7e-3F99, 6734-9-156f-127, 4186-9.

Authentication Type
Authentication method: CHAP, Kerberos, or None.
CHAP / **None**

Save Changes
Must reboot system manually for changes to take place.

3.3.2.2.2 MAC A0:42:3F:37:EA:08



iSCSI Mode
Disabled, Enabled, Enabled for MPIO.

Disabled / Enabled / Enabled for MPIO

Internet Protocol
Initiator IP address is system assigned in IP6 mode. In Autoconfigure mode, iSCSI driver will attempt to connect iSCSI target via IPv4 stack, if failed then attempt IPv6 stack.

IPv4 / IPv6 / Autoconfigure

Connection Retry Count
The minimum value is 0 and the maximum is 16. 0 means no retry.

Connection Establishing Timeout
The timeout value in milliseconds. The minimum value is 100 milliseconds and the maximum is 20 seconds.

Configure ISID
OUI-format ISID in 6 bytes, default value is derived from MAC address. Only last 3 bytes are configurable. Example: update 0ABBCCDDEEFF to OABBCCF07901 by input F07901.

Enable DHCP
Enable DHCP.
Disabled / Enabled

Initiator IP Address
Enter IP address in dotted-decimal notation.

Initiator Subnet Mask
Enter IP address in dotted-decimal notation.

Gateway
Enter IP address in dotted-decimal notation.

Target Name
The worldwide unique name of the target. Only iqn. format is accepted. Range is from 4 to 223
iqu. xxx

Target Address
Enter Target address in IPv4, IPv6 or URL format. You need to configure DNS server address in advance if input a URL string.

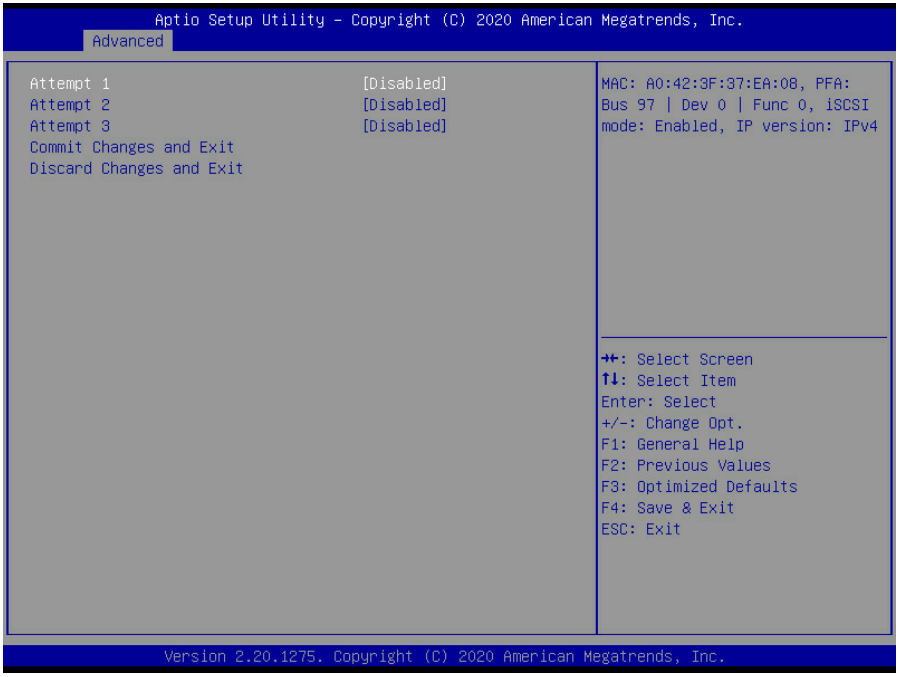
Target Port
Target Port.

Boot LUN
Hexadecimal representation of the LU number. Examples are: 4752-3A4F-6b7e-3F99, 6734-9-156f-127, 4186-9.

Authentication Type
Authentication method: CHAP, Kerberos, or None.
CHAP / **None**

Save Changes
Must reboot system manually for changes to take place.

3.3.2.3 Delete Attempts



Attempt 1
MAC: A0:42:3F:37:EA:08, PFA: Bus 97/ Dev 0 / Func 0, iSCSI mode: Enabled, IP version: IPv4.

Disabled / Enabled

Attempt 2
MAC: 36:02:0B:83:D7:63, PFA: Bus 35 / Dev 0 / Func 3, iSCSI mode: Disabled, IP version: IPv4.

Disabled / Enabled

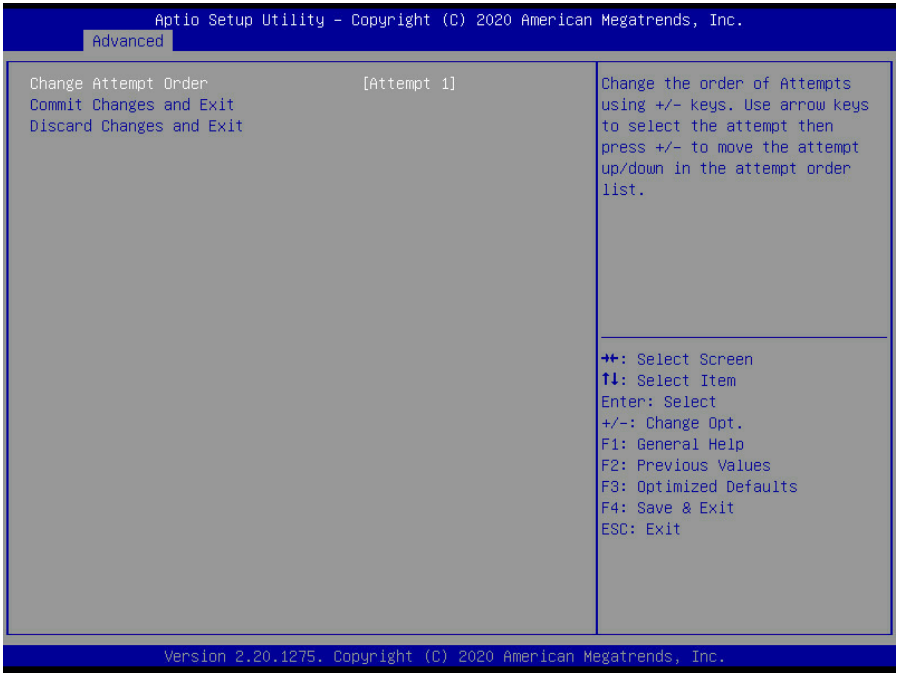
Attempt 3
MAC: 36:02:0B:83:D7:63, PFA: Bus 35 / Dev 0 / Func 3, iSCSI mode: Disabled, IP version: IPv4.

Disabled / Enabled

Commit Changes and Exit
Commit Changes and Exit.

Discard Changes and Exit
Discard Changes and Exit.

3.3.2.4 Change Attempt Order



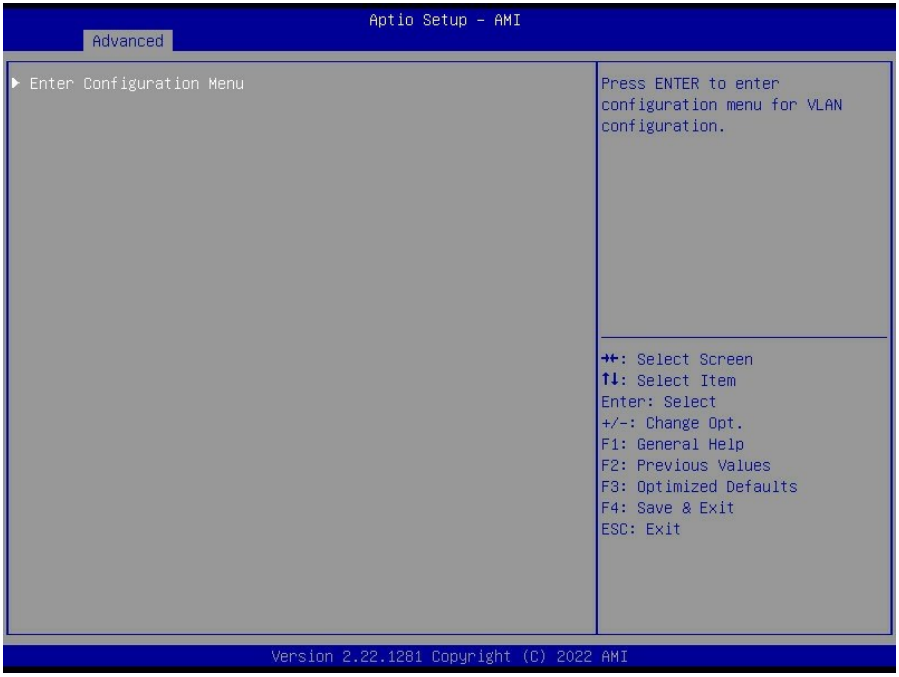
Change Attempt Order
Change the order of Attempts using +/- keys. Use arrow keys to select the attempt then press +/- to move the attempt up/down in the attempt order list.

Attempt 1 / Attempt 2 / Attempt 3

Commit Changes and Exit
Commit Changes and Exit.

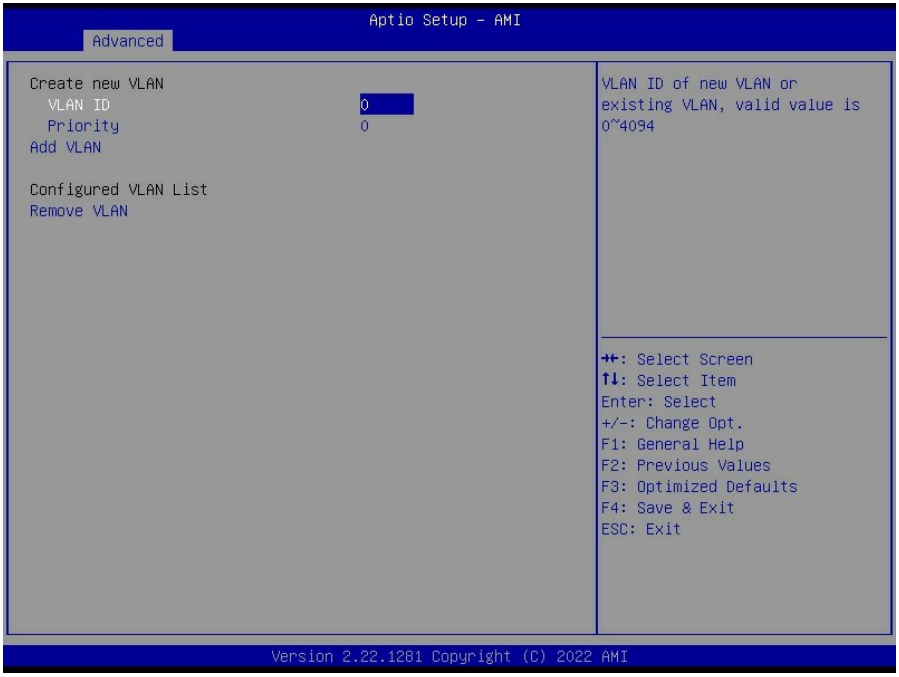
Discard Changes and Exit
Discard Changes and Exit.

3.3.3 VLAN Configuration



Enter Configuration
Press ENTER to enter configuration menu for VLAN configuration.

3.3.3.1 Enter Configuration



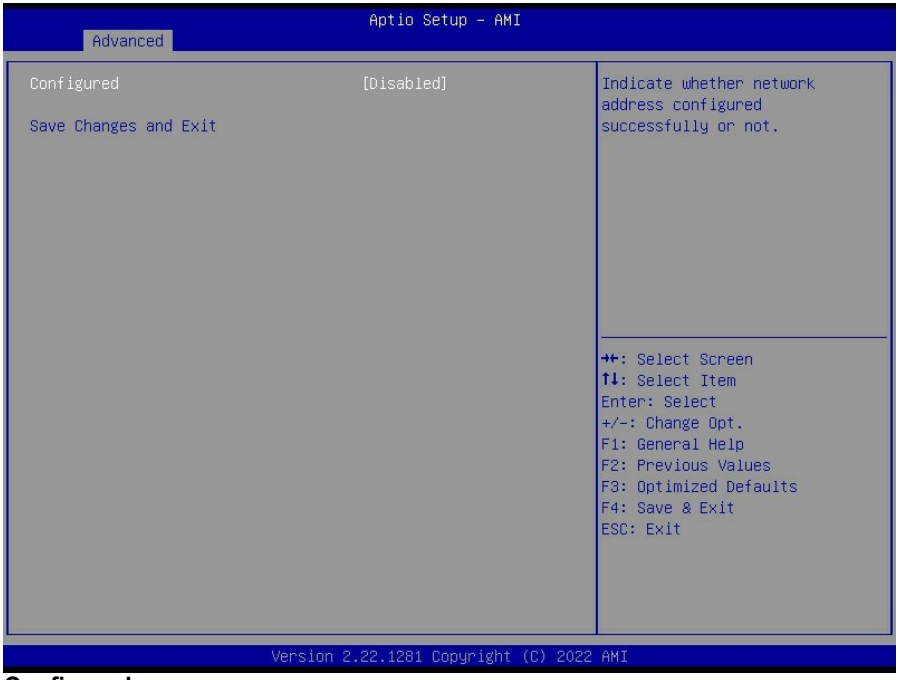
VLAN ID
VLAN ID of new VLAN or existing VLAN, valid value is 0~4094

Priority
802.1Q Priority, valid value is 0~7

Add VLAN
Create a new VLAN or update existing VLAN

Remove VLAN
Remove selected VLANs

3.3.4 MAC: AA978B9B6482-IPv4 Network Menu



Configured

Indicate whether network address configured successfully or not.

Disabled / Enabled

NOTE: When Configured was set to **Enabled,** the following items will be available to set up.

Enable DHCP

Indicate whether network address configured successfully or not.

Disabled / Enabled

Local IP Address

Enter IP address in dotted-decimal notation. Example: 162.168.10.12

Local NetMask

Enter Netmask in dotted-decimal notation. Example:255.255.255.0

Local Gateway

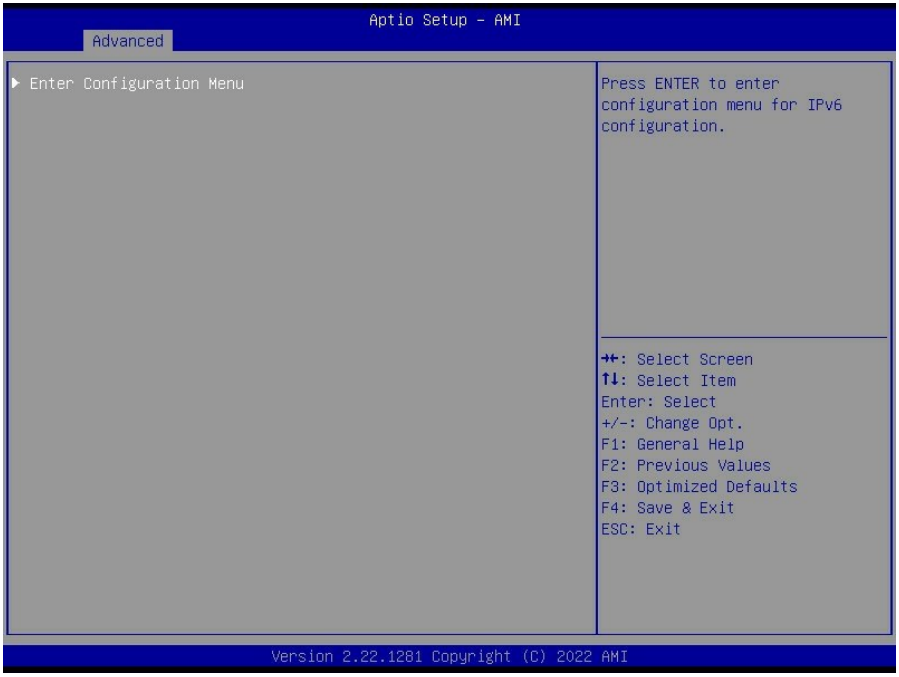
Enter Gateway in dotted-decimal notation. Example:192.168.10.1

Local DNS Servers

Enter DNS Servers in dotted-decimal notation. Example:192.168.10.8
192.168.10.9

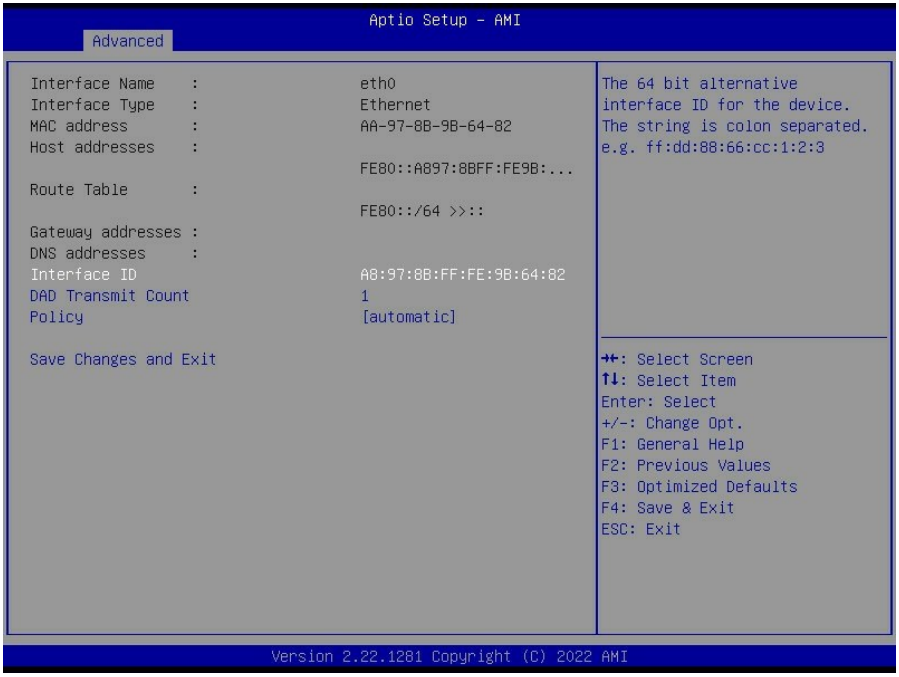
Save Changes and Exit
Save Changes and Exit

3.3.5 MAC: AA978B9B6482-IPv6 Network Menu



Enter Configuration Menu
Press ENTER to enter configuration menu for IPv6 configuration.

3.3.5.1 Enter Configuration Menu



Interface ID
The 64 bit alternative interface ID for the device. The string is colon separated.
e.g. ff:dd:88:66:cc:1:2:3

DAD Transmit Count
The number of consecutive Neighbor Solicitation message sent while performing Duplicate Address Detection on a tentative address. A value of zero indicates that duplicate address detection is not performed.

Policy
Automatic or manual
Automatic / manual

Save Changes and Exit
Save changes for interface ID, DAD transmit count, policy, and data in advanced configuration.

3.3.6 Network Stack Configuration

Network Stack
Enable/Disable UEFI Network Stack
Disabled / Enabled

NOTE: When the Network Stack was set to **Enabled**, the following items will appear.

IPv4 PXE Support.
Enable/Disable IPv4 PXE boot support. If disabled, IPv4 PXE boot support will not be available.
Disabled / **Enabled**

IPv4 HTTPs Support
Enable/Disable IPv4 HTTPs boot support. If disabled, IPv4 HTTPS boot support will not be available.
Disabled / Enabled

IPv6 PXE Support
Enable/Disable IPv6 HTTPs boot support. If disabled, IPv6 HTTPS boot support will not be available.
Disabled / Enabled

IPv6 HTTPs Support
Enable/Disable IPv6 HTTPs boot support. If disabled, IPv6 HTTPS boot support will not be available.

Disabled / Enabled

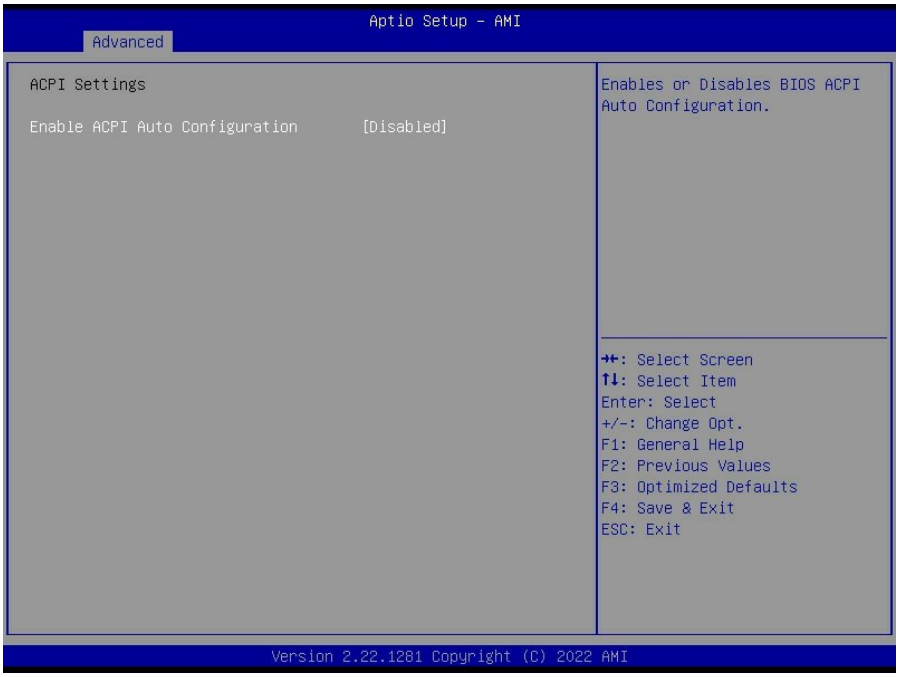
PXE boot wait time
Wait time in seconds to press ESC key to abort the PXE boot. Use either +/- or numeric keys to set the value.

0

Media detect count
Number of times the presence of media will be checked. Use either +/- or numeric keys to set the value.

1

3.3.7 ACPI Settings



Enable ACPI Auto Configuration
Enables or Disables BIOS ACPI Auto Configuration.
Disabled / Enabled

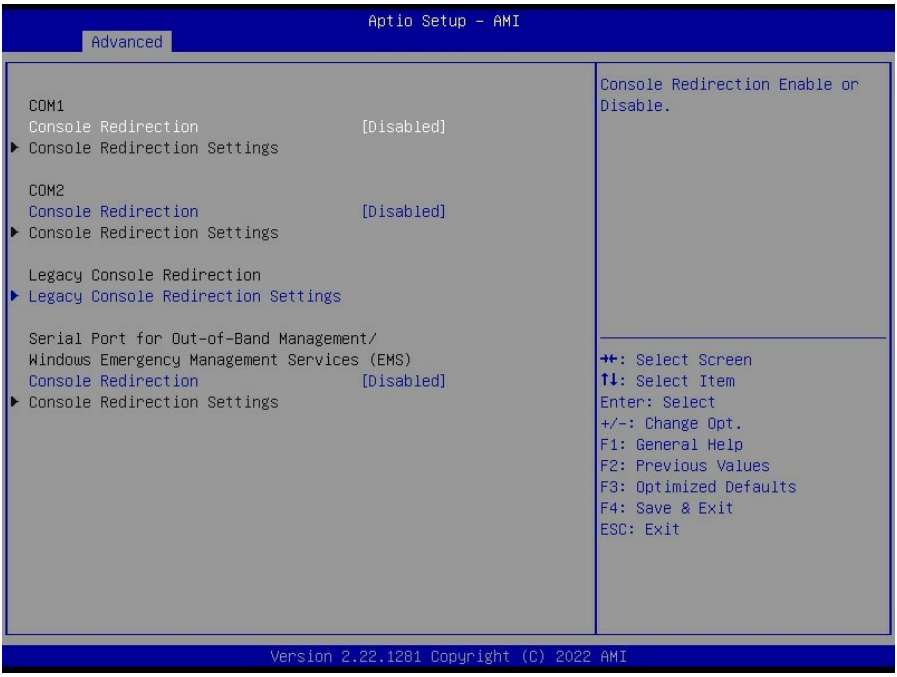
3.3.8 S5 RTC Wake Settings

Wake system from S5

Enable or disable system wake on alarm event. Select Fixed time, system will wake on the hr::min::sec specified. Select dynamic time, system will wake on the current time+ increase minute(s)

Disabled / Fixed Time / Dynamic Time

3.3.9 Serial Port Console Redirection



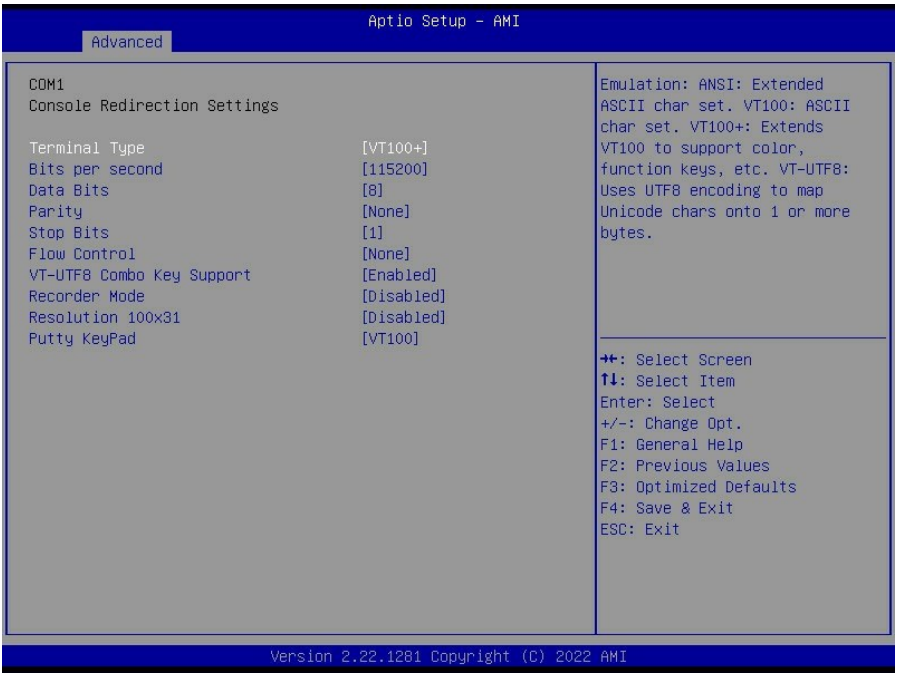
COM1/COM2
Console Redirection
Console redirection enable or disable.
Disabled / Enabled

Legacy Console Redirection
Legacy Console Redirection Settings

Serial Port for Out-Of-Band Management/Windows Emergency Services (EMS) Console Redirection
Console redirection enable or disable.
Disabled / Enabled

Console Redirection Settings
The settings specify how the host computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.
NOTE: Console Redirection Settings menu only appear when **Console Redirection** was set to **[Enabled].**

3.3.9.1 COM1 Console Redirection Settings



Terminal Type
Emulation: ANSI: Extended ASCII char set.
VT100: ASCII char set.
VT100+: Extends VT100 to support color function keys, etc.
VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.

VT-UTF8 **/** VT100 / **VT100+** / ANSI

Bits per Second
Select serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.

9600 / 19200 / 38400 / 57600 **/ 115200**

Data Bits

8 / 7

Parity
A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 if the num of 1's in the data bits is even. Odd: parity bit is 0 if the num of 1's in the data bits is odd. Mark: parity bit is always 1. Space: parity bit is always 0. Mark and Space parity do not allow for error detection.

None / Even / Odd / Mark / Space

Stop Bits
Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.

1 / 2

Flow Control
Flow Control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signal.

None / Hardware RTS/CTS

VT-UTF8 Combo Key Support
Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals.

Enabled / Disabled

Recorder Mode
With this mode enabled only text will be sent. This is to capture Terminal data.

Disabled / Enabled

Resolution 100x31
Enable or disable extended terminal resolution.

Disabled / Enabled

Putty KeyPad
Select FunctionKey and KeyPad on Putty.

VT100 / LINUX / XTERMR6 / SCO / ESCN / VT400

3.3.9.2 COM2 Console Redirection Settings

```
Aptio Setup - AMI
Advanced

COM2
Console Redirection Settings

Terminal Type                    [VT100+]
Bits per second                  [115200]
Data Bits                        [8]
Parity                           [None]
Stop Bits                        [1]
Flow Control                     [None]
VT-UTF8 Combo Key Support        [Enabled]
Recorder Mode                    [Disabled]
Resolution 100x31                [Disabled]
Putty KeyPad                     [VT100]

Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

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```

Terminal Type
Emulation: ANSI: Extended ASCII char set.
VT100: ASCII char set.
VT100+: Extends VT100 to support color function keys, etc.
VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.
VT100 / **VT100+** / VT-UTF8 **/** ANSI

Bits per Second
Select serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.
9600 / 19200 / 38400 / 57600 / **115200**

Data Bits
8 / 7

Parity
A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 if the num of 1's in the data bits is even. Odd: parity bit is 0 if the num of 1's in the data bits is odd. Mark: parity bit is always 1. Space: parity bit is always 0. Mark and Space parity do not allow for error detection.
None / Even / Odd / Mark / Space

Stop Bits
Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.

1 / 2

Flow Control
Flow Control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signal.

None / Hardware RTS/CTS

VT-UTF8 Combo Key Support
Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals.

Enabled / Disabled

Recorder Mode
With this mode enabled only text will be sent. This is to capture Terminal data.

Disabled / Enabled

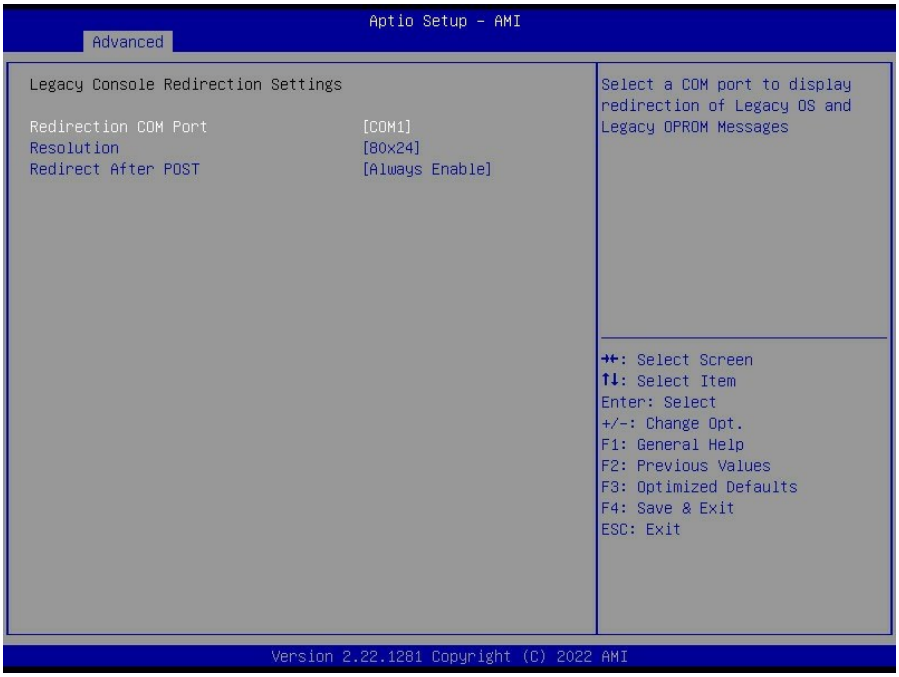
Resolution 100x31
Enable or disable extended terminal resolution.

Disabled / Enabled

Putty KeyPad
Select FunctionKey and KeyPad on Putty.

VT100 / LINUX / XTERMR6 / SCO / ESCN / VT400

3.3.9.3 Legacy Console Redirection Settings



Redirection COM Port
Select a COM port to display redirection of Legacy OS and Legacy OPROM Messages

COM1 / COM2

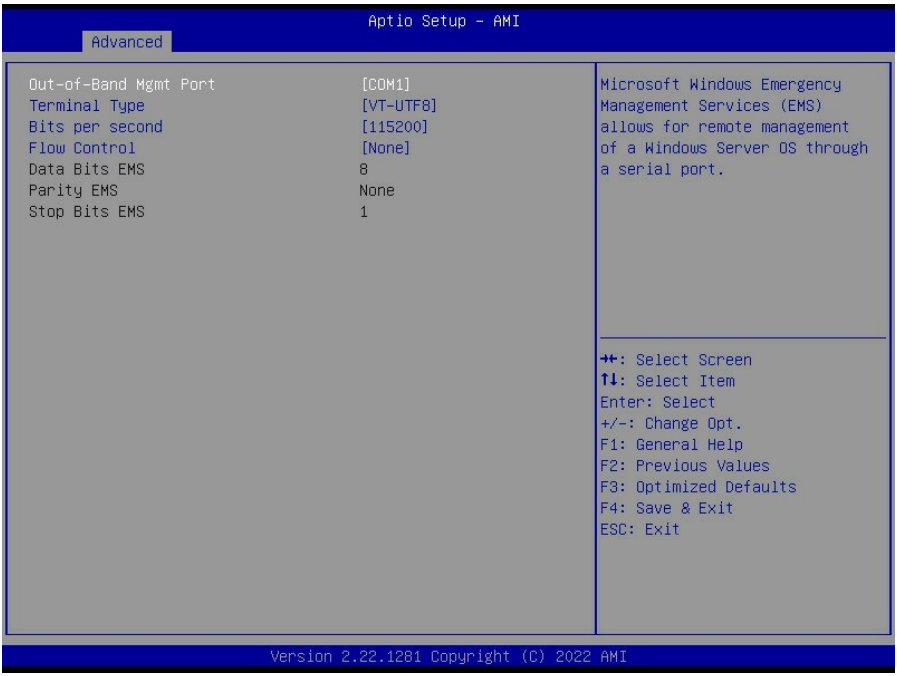
Resolution
On Legacy OS, the Number of Rows and Columns supported redirection

80x24 / **80x25**

Redirect After POST
when Bootloader is selected, then Legacy Console Redirection is disabled before booting to legacy OS, when Always Enable is selected, then Legacy Console Redirection is enabled for Legacy OS. Default setting for this option is set to Always Enable.

Always Enable / BootLoader

3.3.9.4 Serial Port for Out-Of-Band Management/Windows Emergency Services (EMS) Console Redirection Settings



Out-of Band Mgmt Port
Microsoft Windows Emergency Management Services (EMS) allows for remote management of a Windows Server OS through a serial port.

COM1 / COM2

Terminal Type
VT-UTF8 is the preferred terminal type for out-of-band management. The next best choice is VT100+ and then VT100. See above, in Console Redirection Settings page, for more Help with Terminal Type/Emulation.

VT-UTF8 / VT100 / VT100+ / ANSI

Bits per Second
Select serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.

9600 / 19200 / 57600 / **115200**

Flow Control
Flow Control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a ‘stop’ signal can be sent to stop the data flow. Once the buffers are empty, a ‘start’ signal can be sent to restart the flow. Hardware flow control uses two wires to send start/stop signal.

None / Hardware RTS/CTS

Data Bits / Parity / Stop Bits
Read only.

3.3.10 USB Configuration

```
Aptio Setup - AMI
Advanced

USB Configuration                                  Enables Legacy USB support.
                                                   AUTO option disables legacy
USB Controllers:                                   support if no USB devices are
      2 XHCIs                                      connected. DISABLE option will
USB Devices:                                       keep USB devices available
      3 Drives, 2 Keyboards, 2 Mice, 3 Hubs        only for EFI applications.

Legacy USB Support                 [Enabled]
XHCI Hand-off                      [Enabled]
USB Mass Storage Driver Support    [Enabled]
Port 60/64 Emulation               [Enabled]

USB hardware delays and time-outs:
USB transfer time-out              [20 sec]        →←: Select Screen
Device reset time-out              [20 sec]        ↑↓: Select Item
Device power-up delay              [Auto]          Enter: Select
                                                   +/-: Change Opt.
                                                   F1: General Help
                                                   F2: Previous Values
                                                   F3: Optimized Defaults
                                                   F4: Save & Exit
                                                   ESC: Exit

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```

Legacy USB Support
Enables USB legacy support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.

Enabled / Disabled / Auto

XHCI Hand-off
This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

Enabled / Disabled

USB Mass Storage Driver Support
Enable/Disable USB Mass Storage Driver Support.

Disabled / **Enabled**

Port 60/64 Emulation
Enable I/O port 60h/64h emulation support. This should be enabled for the complete USB keyboard legacy support for non-USB aware OSes.

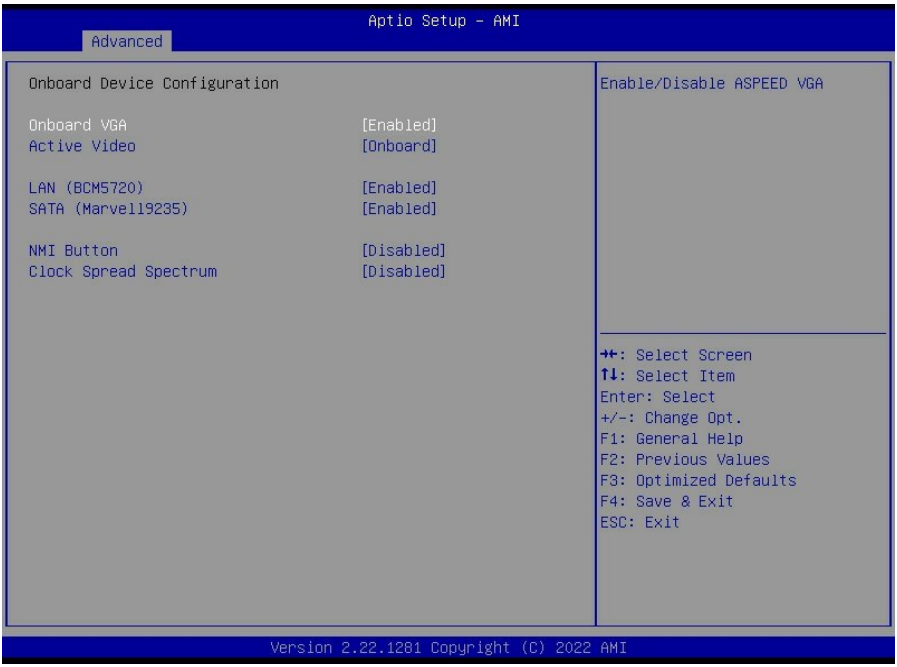
Disabled / **Enabled**

USB transfer time-out
The time-out value for Control, Bulk and Interrupt transfers.
1 sec / 5 sec / 10 sec / **20 sec**

Device reset time-out
USB mass storage device Start Unit command time-out.
10 sec / **20 sec** / 30 sec / 40 sec

Device power-up delay
Maximum time the device will take before it properly reports itself to the Host Controller. AUTO uses default value: for a Root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor.
Auto / Manual

3.3.11 Onboard Device Configuration



Onboard VGA
Enable/Disable ASPEED VGA
Disabled / **Enabled**

Active Video
Select between onboard or external VGA support.
Onboard / Offboard

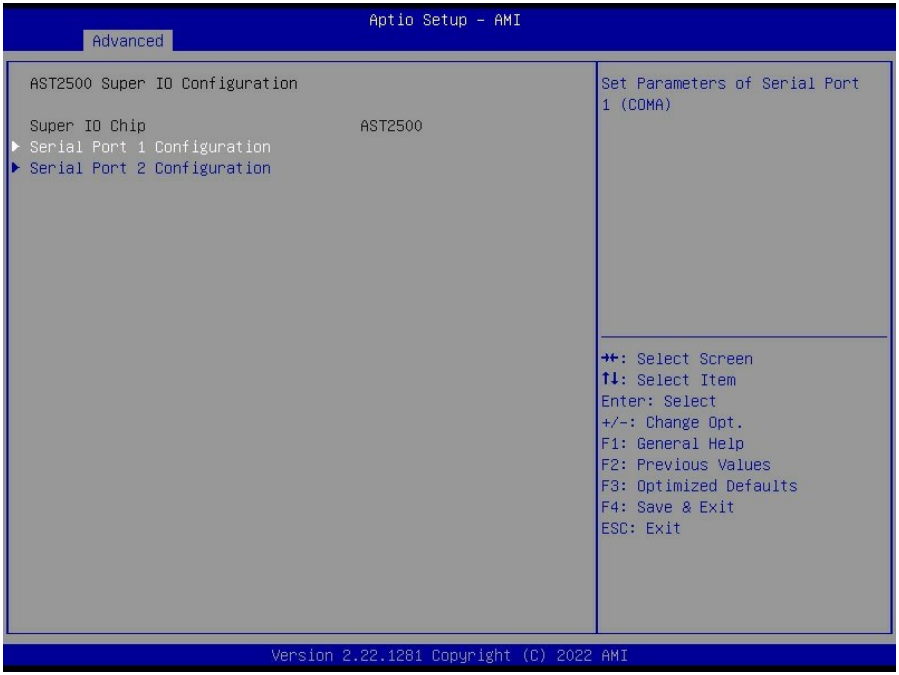
Onboard LAN (B5720)
Enable/Disable Onboard LAN Device
Disabled / **Enabled**

SATA (Marvell9235)
Enable/Disable SATA
Disabled / **Enabled**

NMI Button
Enable or disable NMI button.
Disabled / Enabled

Clock Spread Spectrum
Enable/Disable CG1_PLL Spread Spectrum
Disabled / **Enabled**

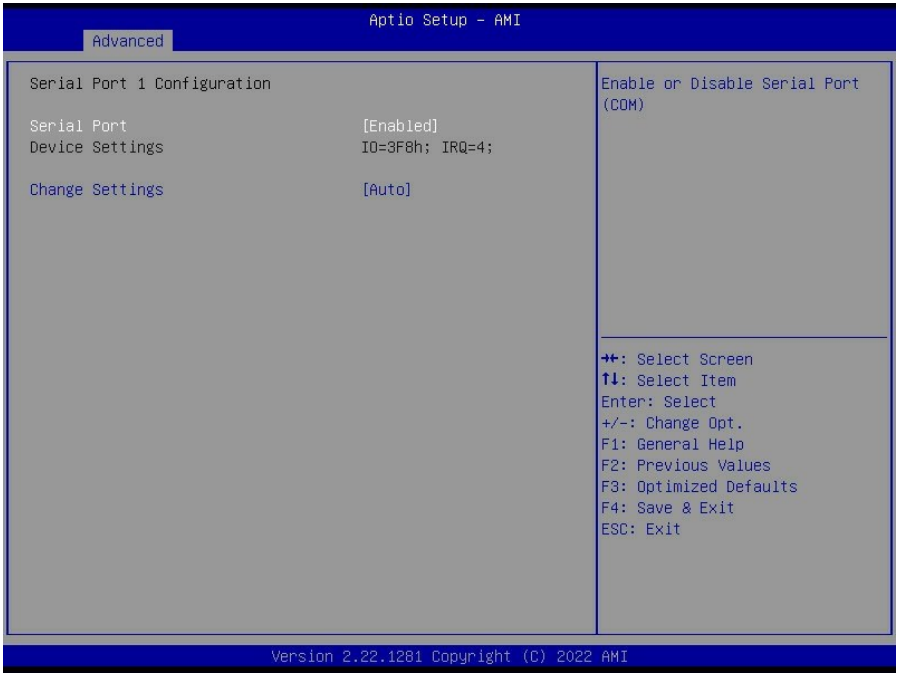
3.3.12 AST2500 Super IO Configuration



Serial Port 1 Configuration
Set Parameters of Serial 1 (COMA).

Serial Port 2 Configuration
Set Parameters of Serial 2 (COMB).

3.3.12.1 Serial Port 1 Configuration



Serial Port

Select an optimal settings for Super IO Device.

Disabled / **Enabled**

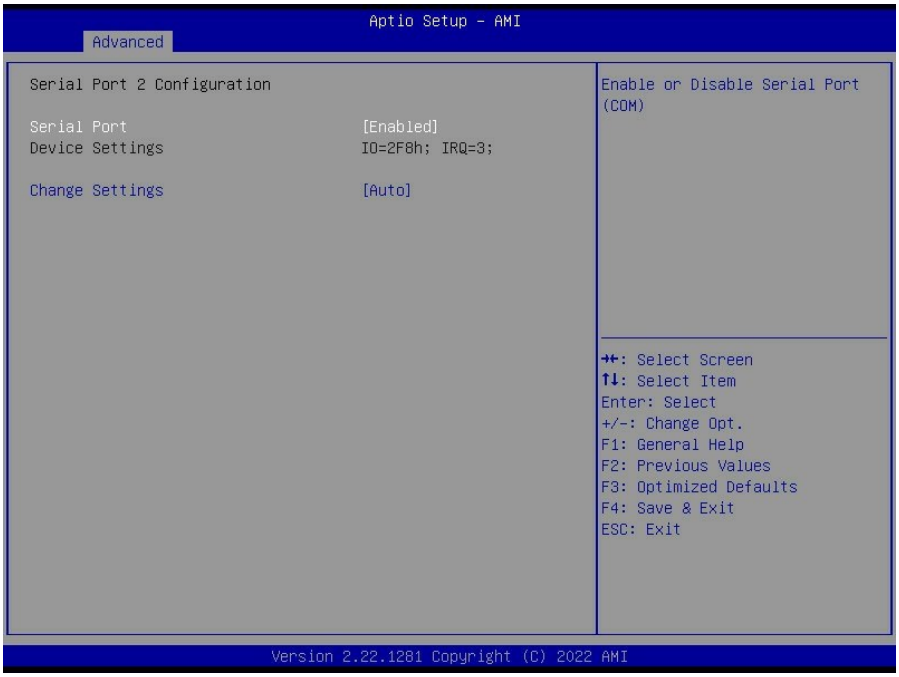
NOTE: Serial Port has set to **Enabled**, the following items will be appear.

Change Settings

Select an optimal settings for Super IO device.

Auto /
IO=2F8h; IRQ=3; /
IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12; /
IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12; /
IO=3E8h, IRQ=3,4,5,6,7,9,10,11,12; /
IO=2E8h, IRQ=3,4,5,6,7,9,10,11,12; /

3.3.12.2 Serial Port 2 Configuration



Serial Port

Select an optimal settings for Super IO Device.

Disabled / **Enabled**

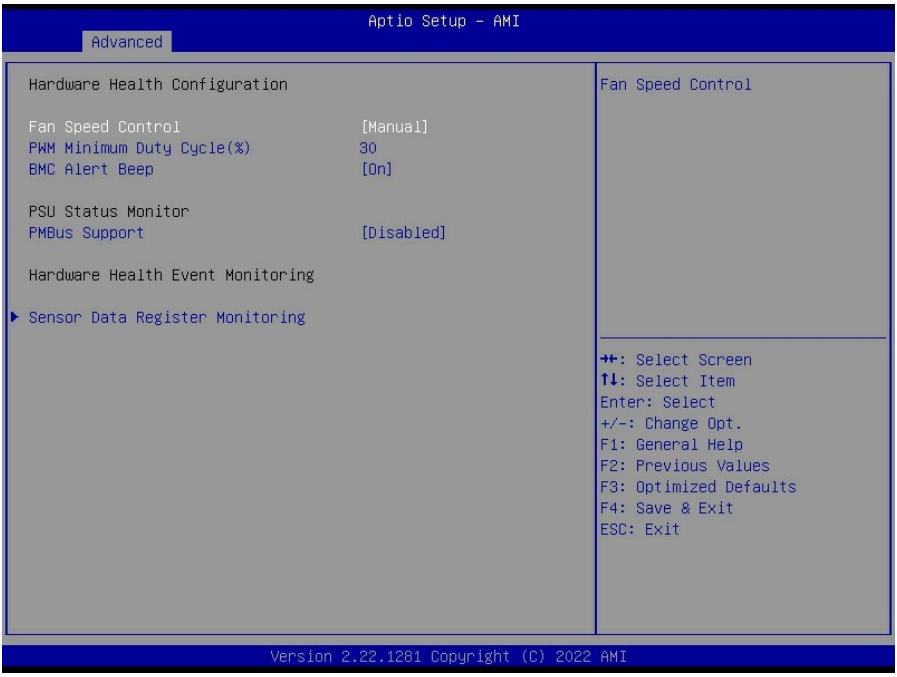
NOTE: Serial Port has set to **Enabled**, the following items will be appear.

Change Settings

Select an optimal settings for Super IO device.

Auto /
IO=2F8h; IRQ=3; /
IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12; /
IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12; /
IO=3E8h, IRQ=3,4,5,6,7,9,10,11,12; /
IO=2E8h, IRQ=3,4,5,6,7,9,10,11,12; /

3.3.13 Hardware Health Configuration



Fan Speed Control
Auto Fan Control help.
Full Speed / **Manual**

NOTE: When **Auto Fan Control was set to [Manual] PWM Minimal Duty Cycle Item will appear.**

PWM Minimal Duty Cycle
PWM Minimal Duty Cycle
30

BMC Alert Beep
Enable/Disable BMC Alert Beep.
On / Off

PMBus support
PMBus Support
Disabled / Enabled

3.3.13.1 Sensor Data Register Monitoring

When you enter the **Sensor Data Register Monitoring** submenu, you will see the following dialog window pop out. Please wait 8~10 seconds.

```
PC Health Status
ID# NAME                    READING      Unit   STATUS
-------------------------------------------------------------

 Sensor Data are reading now,


                 Please wait a moment!!
```

NOTE 1: SDR can not be modified. Read only.

Aptio Setup - AMI

Advanced

Pc Health Status

ID#	NAME	READING	UNIT	STATUS
01	CPU_Tctl_Value	: 36	°C	OK
32	MB_Air_Inlet	: 32	°C	OK
31	SYS_Air_Outlet	: 33	°C	OK
30	SYS_Air_Inlet	: 27	°C	OK
20	CPU_CORE_MOSFET	: 35	°C	OK
27	CPU_SOC_MOSFET	: 34	°C	OK
21	DIMM_MOSFET_1	: 36	°C	OK
22	DIMM_MOSFET_2	: 35	°C	OK
50	OCP_LAN_TEMP	: 47	°C	OK
4E	PCIE_Aera_L	: N/A	°C	
4F	PCIE_Aera_R	: 35	°C	OK
40	NVME_SSD_0	: N/A	°C	
41	NVME_SSD_1	: N/A	°C	
42	NVME_SSD_2	: 38	°C	OK
43	NVME_SSD_3	: 36	°C	OK
44	NVME_SSD_4	: N/A	°C	
45	NVME_SSD_5	: N/A	°C	
46	NVME_SSD_6	: N/A	°C	
47	NVME_SSD_7	: N/A	°C	
48	NVME_SSD_8	: N/A	°C	
49	NVME_SSD_9	: N/A	°C	
4A	NVME_SSD_10	: N/A	°C	

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

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Aptio Setup - AMI

Advanced

4A	NVME_SSD_10	: N/A	°C	
4B	NVME_SSD_11	: N/A	°C	
4C	M.2/M.3_NVMe_1	: N/A	°C	
4D	M.2/M.3_NVMe_2	: N/A	°C	
10	CPU_UMC0_CH_A0	: N/A	°C	
11	CPU_UMC0_CH_A1	: N/A	°C	
12	CPU_UMC1_CH_B0	: N/A	°C	
13	CPU_UMC1_CH_B1	: N/A	°C	
14	CPU_UMC3_CH_C0	: N/A	°C	
15	CPU_UMC3_CH_C1	: N/A	°C	
16	CPU_UMC2_CH_D0	: N/A	°C	
17	CPU_UMC2_CH_D1	: N/A	°C	
18	CPU_UMC6_CH_E0	: N/A	°C	
19	CPU_UMC6_CH_E1	: 31	°C	OK
1A	CPU_UMC7_CH_F0	: N/A	°C	
1B	CPU_UMC7_CH_F1	: N/A	°C	
1C	CPU_UMC5_CH_G0	: N/A	°C	
1D	CPU_UMC5_CH_G1	: N/A	°C	
1E	CPU_UMC4_CH_H0	: N/A	°C	
1F	CPU_UMC4_CH_H1	: N/A	°C	
99	PVDDCR_CPU	: 1.1352	V	OK
95	PVPP_ABCD	: 2.5596	V	OK
96	PVPP_EFGH	: 2.5434	V	OK
9C	PVDDIO_ABCD	: 1.2320	V	OK
9D	PVDDIO_EFGH	: 1.2320	V	OK

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

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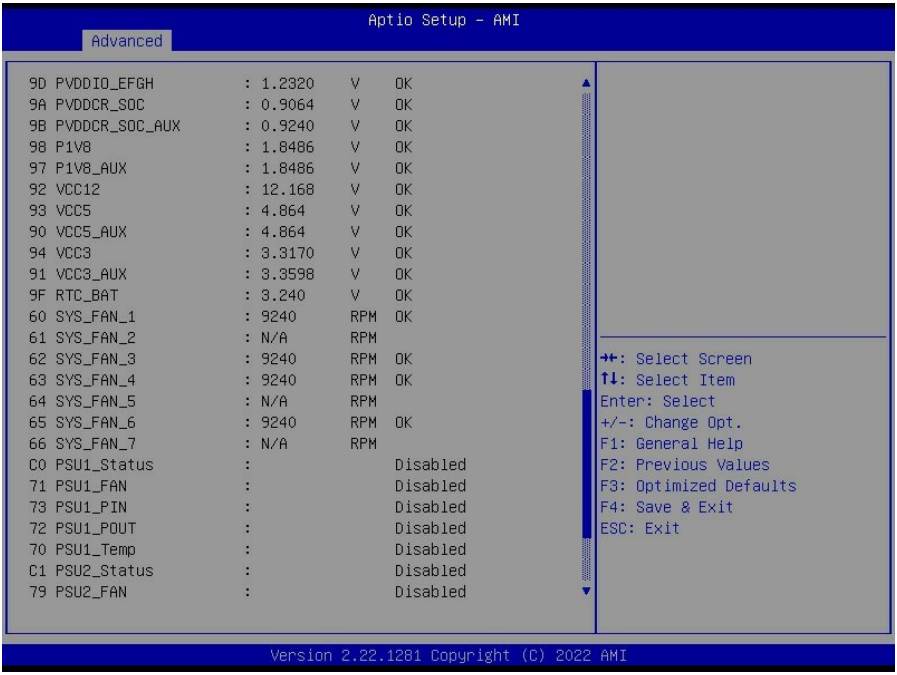
Aptio Setup - AMI
Advanced
9D PVDDIO_EFGH : 1.2320 V OK
9A PVDDCR_SOC : 0.9064 V OK
9B PVDDCR_SOC_AUX : 0.9240 V OK
98 P1V8 : 1.8486 V OK
97 P1V8_AUX : 1.8486 V OK
92 VCC12 : 12.168 V OK
93 VCC5 : 4.864 V OK
90 VCC5_AUX : 4.864 V OK
94 VCC3 : 3.3170 V OK
91 VCC3_AUX : 3.3598 V OK
9F RTC_BAT : 3.240 V OK
60 SYS_FAN_1 : 9240 RPM OK
61 SYS_FAN_2 : N/A RPM
62 SYS_FAN_3 : 9240 RPM OK
63 SYS_FAN_4 : 9240 RPM OK
64 SYS_FAN_5 : N/A RPM
65 SYS_FAN_6 : 9240 RPM OK
66 SYS_FAN_7 : N/A RPM
C0 PSU1_Status : Disabled
71 PSU1_FAN : Disabled
73 PSU1_PIN : Disabled
72 PSU1_POUT : Disabled
70 PSU1_Temp : Disabled
C1 PSU2_Status : Disabled
79 PSU2_FAN : Disabled
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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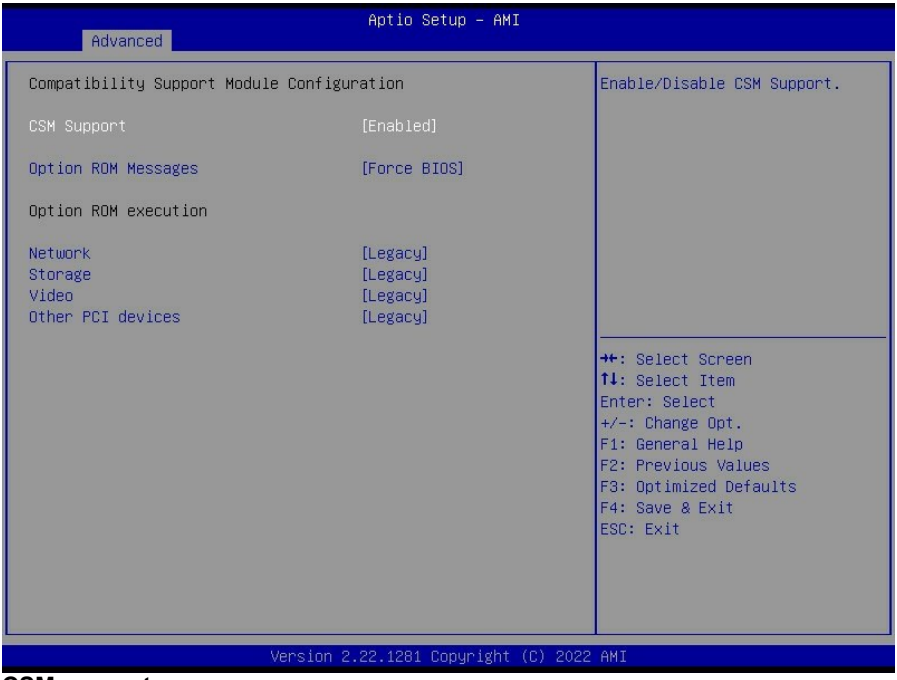
3.3.14 CSM Configuration



CSM support
Enable/Disable CSM Support
Enabled / Disabled

Option ROM Messages
Set display mode for Option ROM
Force BIOS / Keep Current

Network
Controls the execution of UEFI and legacy PXE OpROM
Do not launch / UEFI / **legacy**

Storage
Controls the execution of UEFI and legacy PXE OpROM
Do not launch / UEFI / **legacy**

Video
Controls the execution of UEFI and legacy PXE OpROM
Do not launch / UEFI / **legacy**

Other PCI devices
Determines OpRom execution policy for devices other than network, storage, or video
Do not launch / UEFI / **legacy**

3.3.15 CPU Configuration

SVM Mode
View Information related to CPU0
Enabled / Disabled

SMEE
Control secure memory encryption enable
Enabled / Disabled

CPU 0 Information
View Information related to CPU 0

3.3.16 SATA Configuration

```
Aptio Setup - AMI
Advanced

SATA Configuration

SATA0(SLIMSAS1)          Not Present
SATA1(SLIMSAS1)          Not Present
SATA2(SLIMSAS1)          Not Present
SATA3(SLIMSAS1)          Not Present
SATA4(SLIMSAS1)          Not Present
SATA5(SLIMSAS1)          Not Present
SATA6(SLIMSAS1)          Not Present
SATA7(SLIMSAS1)          Not Present
SATA8(SLIMSAS2)          Not Present
SATA9(SLIMSAS2)          Not Present
SATA10(SLIMSAS2)         Not Present
SATA11(SLIMSAS2)         Not Present
SATA12(SLIMSAS2)         Not Present
SATA13(SLIMSAS2)         Not Present
SATA14(SLIMSAS2)         Not Present
SATA15(SLIMSAS2)         Not Present
NGFF1                    Not Present
NGFF2                    Not Present

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

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```

3.3.17 NVMe Configuration

```
Aptio Setup - AMI
Advanced

NVMe Controller and Drive information

NVMe3 Bus:81 Dev:0 Func:0          SAMSUNG MZQLW960HMJP-...
NVMe Size                          960.1GB

NVMe2 Bus:82 Dev:0 Func:0          SAMSUNG MZQLW960HMJP-...
NVMe Size                          960.1GB

NVMe Bus:C4 Dev:0 Func:0           SAMSUNG MZQLW960HMJP-...
NVMe Size                          960.1GB

NVMe Bus:C5 Dev:0 Func:0           SAMSUNG MZQLW960HMJP-...
NVMe Size                          960.1GB

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

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```
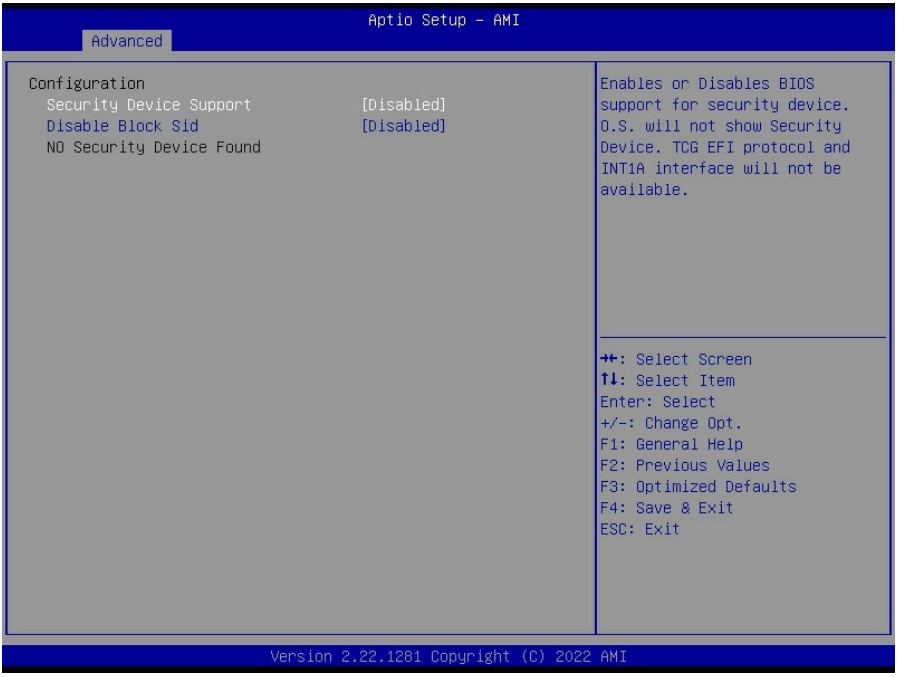

3.3.18 Trusted Computing



Security Device Support
Enable or disable BIOS support for security device. O.S. will not show Security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

Enabled / **Disabled**

Disable Block Sid
Override to allow SID authentication in TCG Storage device

Enabled / **Disabled**

3.3.19 PCI Subsystem

Above 4G Decoding
Globally Enables or Disables 64bit capable Devices to be decoded in Above 4G Address Space(Only if System supports 64 bit PCI Decoding).

Enabled / Disabled

SR-IOV Support
If system has SR-IOV capable PCIe devices, this option Enable or Disable Single root IO virtualization Support

Enabled / Disabled

PCI Express Settings
Change PCI Express Devices Settings

3.3.19.1 PCI Express Subsystem

Maximum Payload

Set Maximum Payload of PCI Express Device or allow System BIOS to select the value.

Auto / 128 Bytes / 256 Bytes / 512 Bytes / 1024Bytes / 2048 Bytes / 4096 Bytes

3.3.20 Option ROM Dispatch Configuration

```
Aptio Setup - AMI
Advanced

Device Class Option ROM Dispatch Policy:

LAN2 (BCM5720)                          [Disabled]
LAN3 (BCM5720)                          [Disabled]

Riser-R Up                              [Enabled]
Riser-R Middle Network Controller       [Enabled]
Riser-R Down Network Controller         [Enabled]
Riser-L Up                              [Enabled]
Riser-L Middle                          [Enabled]
Riser-L Down                            [Enabled]

WARNING: Changing Device(s) Option ROM
dispatch policy may affect system's ability
to post and/or boot!PROCEED WITH CAUTION!

Enable or Disable LAN2 Option
Rom

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

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```

LAN2 (BCM5720)
Enable or Disable LAN2 Option Rom
Enabled / **Disabled**

LAN3 (BCM5720)
Enable or Disable LAN3 Option Rom
Enabled / **Disabled**

Riser-R Up
Enable or Disable Option ROM execution for selected Slot.
Enabled / Disabled

Riser-R Middle Network Controller
Enable or Disable Option ROM execution for selected Slot.
Enabled / Disabled

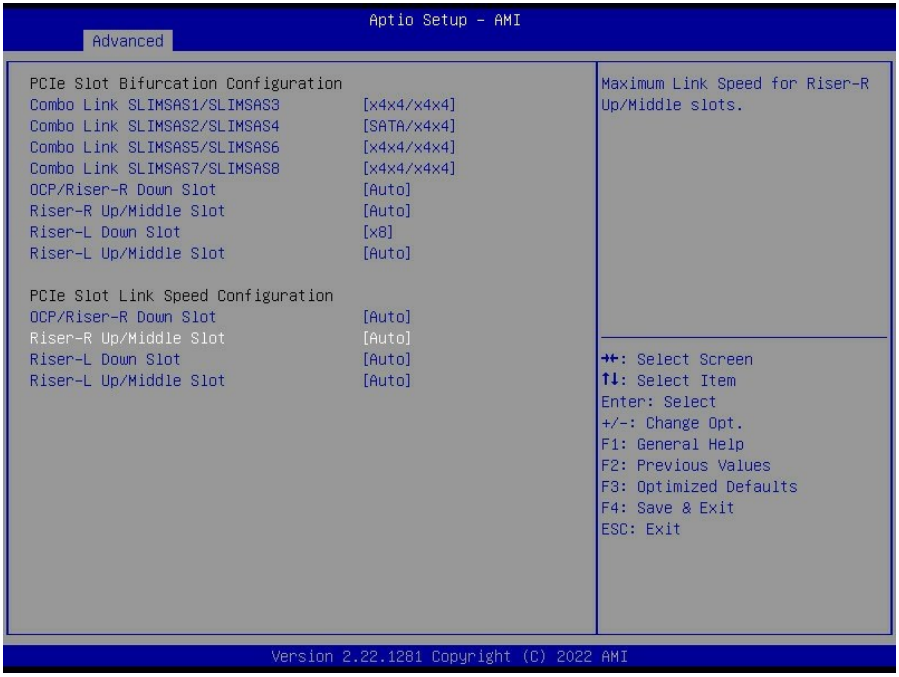
Riser-R Down Network Controller
Enable or Disable Option ROM execution for selected Slot.
Enabled / Disabled

Riser-L Up
Enable or Disable Option ROM execution for selected Slot.
Enabled / Disabled

Riser-L Middle
Enable or Disable Option ROM execution for selected Slot.
Enabled / Disabled

Riser-L Down
Enable or Disable Option ROM execution for selected Slot.
Enabled / Disabled

3.3.21 PCIE Slot Configuration



Combo Link SLIMSAS1/SLIMSAS3
Select Bifurcation for Combo Link SLIMSAS1/SLIMSAS3
X16 / x8x8/ x8/x4x4 / x4x4/x8/ **x4x4/x4x4** / SATA/x8/ SATA/x4x4

Combo Link SLIMSAS2/SLIMSAS4
Select Bifurcation for Combo Link SLIMSAS2/SLIMSAS4
X16 / x8x8/ x8/x4x4 / x4x4/x8/ x4x4/x4x4 / SATA/x8/ **SATA/x4x4**

Combo Link SLIMSAS5/SLIMSAS6
Select Bifurcation for Combo Link SLIMSAS2/SLIMSAS4
X16 / x8x8/ x8/x4x4 / x4x4/x8/ **x4x4/x4x4** / SATA/x8/ SATA/x4x4

Combo Link SLIMSAS7/SLIMSAS8
Select Bifurcation for Combo Link SLIMSAS2/SLIMSAS4
X16 / x8x8/ x8/x4x4 / x4x4/x8/ **x4x4/x4x4** / SATA/x8/ SATA/x4x4

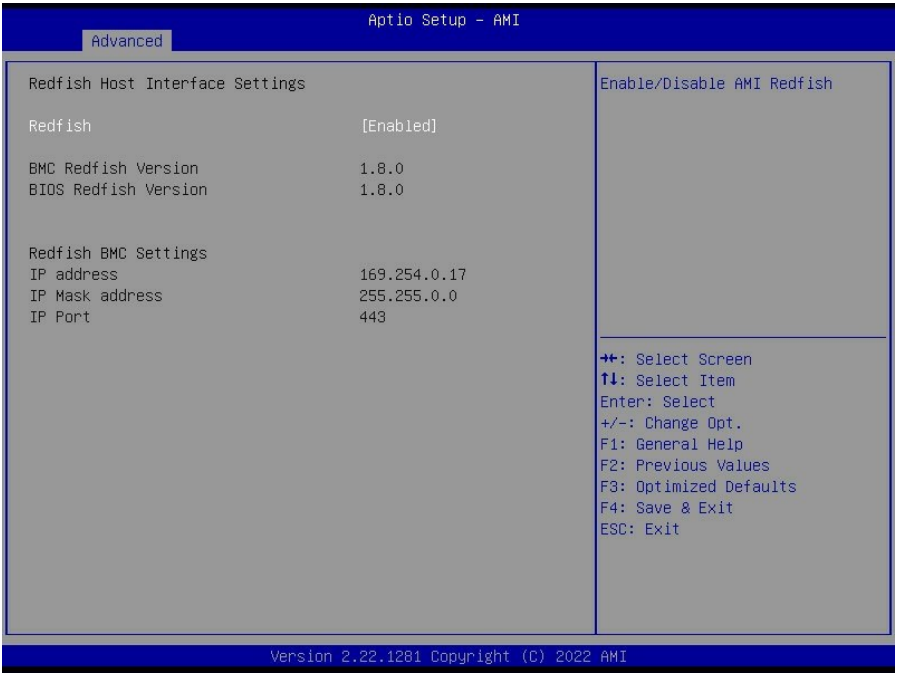
OCP / Riser-R Down Slot
Selects PCIe port Bifurcation for OCP/Riser-R Down slots.
Auto / GEN1(2.5 GT/s) / GEN2(5 GT/s) / GEN3(8 GT/s) / GEN4(16 GT/s)

Riser-R Up/Middle Slot
Selects PCIe port Bifurcation for Riser-R Up/Middle slots.
Auto / GEN1(2.5 GT/s) / GEN2(5 GT/s) / GEN3(8 GT/s) / GEN4(16 GT/s)

Riser-L Down Slot
Selects PCIe port Bifurcation for Riser-L Down slot.
Auto / GEN1(2.5 GT/s) / GEN2(5 GT/s) / GEN3(8 GT/s) / GEN4(16 GT/s)

Riser-L Up/Middle Slot
Selects PCIe port Bifurcation for Riser-L Up/Middle slots.
Auto / GEN1(2.5 GT/s) / GEN2(5 GT/s) / GEN3(8 GT/s) / GEN4(16 GT/s)

3.3.22 Redfish Host Interface Configuration



Redfish

Enable/Disable AMI Redfish

Enabled / Disabled

3.4 Chipset Menu

PCIe Compliance Mode
PCIe Link Compliance Mode

North Bridge
North Bridge Parameters

3.4.1 North Bridge Configuration

Memory Configuration
Memory Configuration

Memory Information
Total Memory： xxxxx MB

CPU 0 Information
View Memory Information related to CPU 0

3.4.1.1 CPU 0 Information

```
Aptio Setup - AMI
Chipset

CPU 0 Information

P0_UMC0_CH_A0: Not Present
P0_UMC0_CH_A1: Not Present
P0_UMC1_CH_B0: Not Present
P0_UMC1_CH_B1: Not Present
P0_UMC3_CH_C0: Not Present
P0_UMC3_CH_C1: Not Present
P0_UMC2_CH_D0: Not Present
P0_UMC2_CH_D1: Not Present
P0_UMC6_CH_E0: Not Present
P0_UMC6_CH_E1: 2667MT/s Samsung DRx8 16GB RDIMM
P0_UMC7_CH_F0: Not Present
P0_UMC7_CH_F1: Not Present
P0_UMC5_CH_G0: Not Present
P0_UMC5_CH_G1: Not Present
P0_UMC4_CH_H0: Not Present
P0_UMC4_CH_H1: Not Present

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

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```
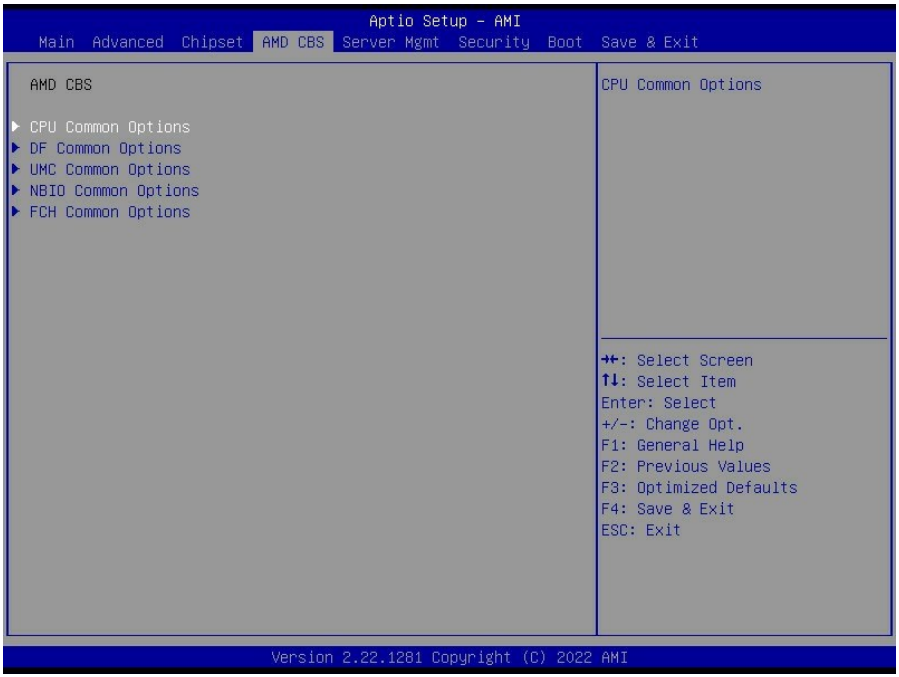
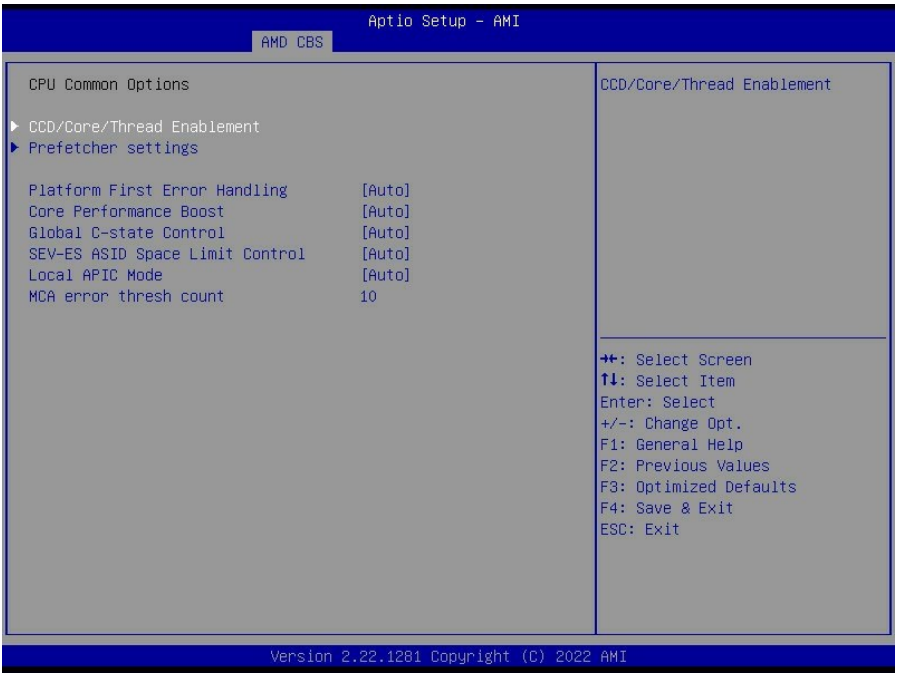

3.5 AMD CBS Menu



3.5.1 CPU Common Options Submenu



Platform First Error Handling
Enable/disable PFEH, cloak individual banks, and mask deferred error interrupts from each bank.
Enabled / Disabled / **Auto**

Core Performance Boost
Disable CPB
Disabled / **Auto**

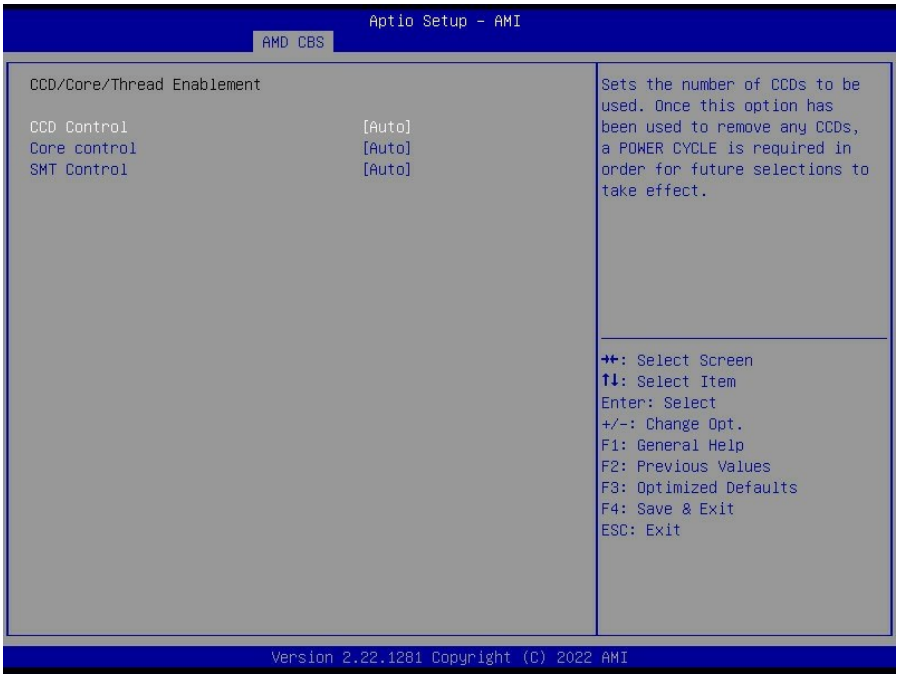
Global C-state Control
Controls IO based C-state generation and DF C-states.
Disabled / Enabled / **Auto**

SEV-ES ASID Space Limit Control
SEV-ES ASID Space Limit Control
Auto / Manual

Local APIC Mode
Local APIC Mode
Compatibility / xAPIC / x2APIC / **Auto**

MCA error thresh count
Default is 10, and the threshold range is from 1 to 4095.
10

3.5.1.1 CCD/Core/ Thread Enablement Submenu

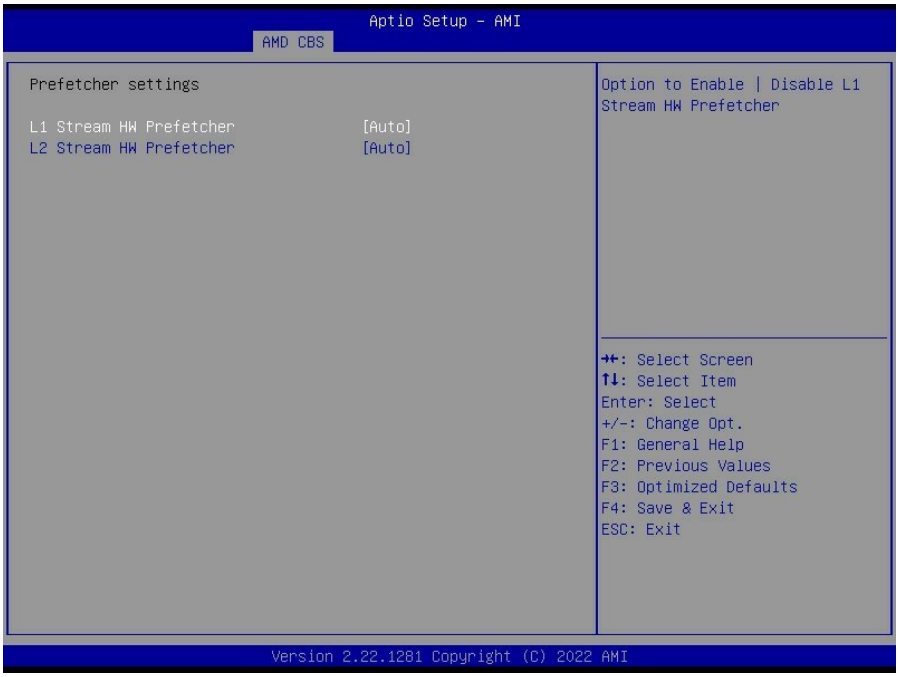


CCD Control
Sets the number of CCDs to be used. Once this option has been used to remove any CCDs, a POWER CYCLE is required in order for future selections to take effect.
Auto / 2 CCDs / 3 CCDs / 4 CCDs / 6 CCDs

Core control
Sets the number of CCDs to be used. Once this option has been used to remove any CCDs, a POWER CYCLE is required in order for future selections to take effect.
Auto / ONE (1+0) / TWO (1 + 1) / THREE (3 + 0) / FOUR (4 + 0) / FIVE (5 + 0) / SIX (6 + 0) / SEVEN (7 + 0)

SMT Control
Can be used to disable symmetric multithreading. To re-enable SMT, a POWER CYCLE is needed after selecting the 'Auto' option. WARNING – S3 is NOT SUPPORTED on systems where SMT is disabled.
Disabled / Enabled / **Auto**

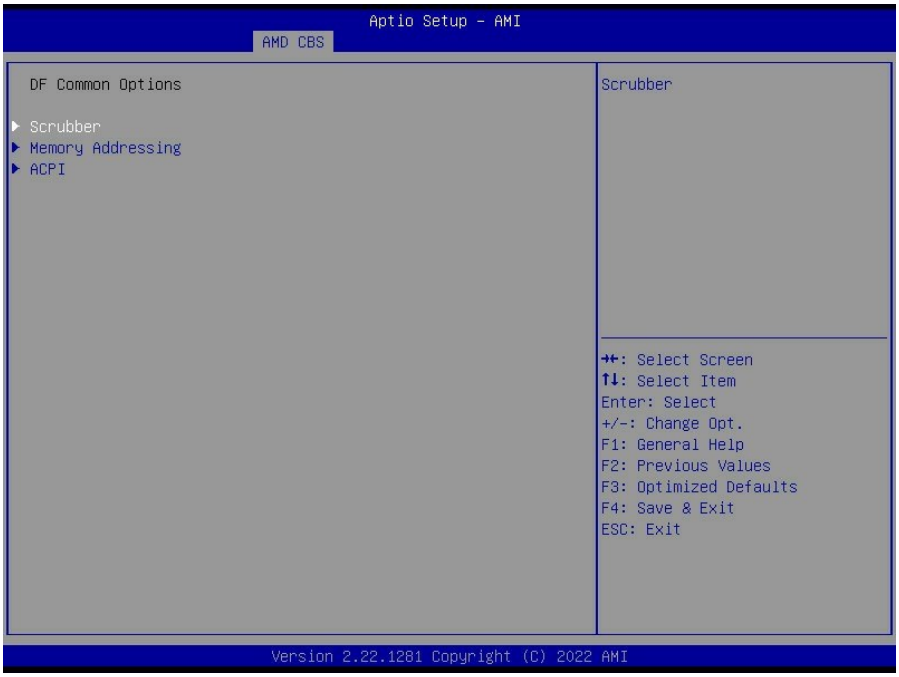
3.5.1.2 Prefetcher Submenu



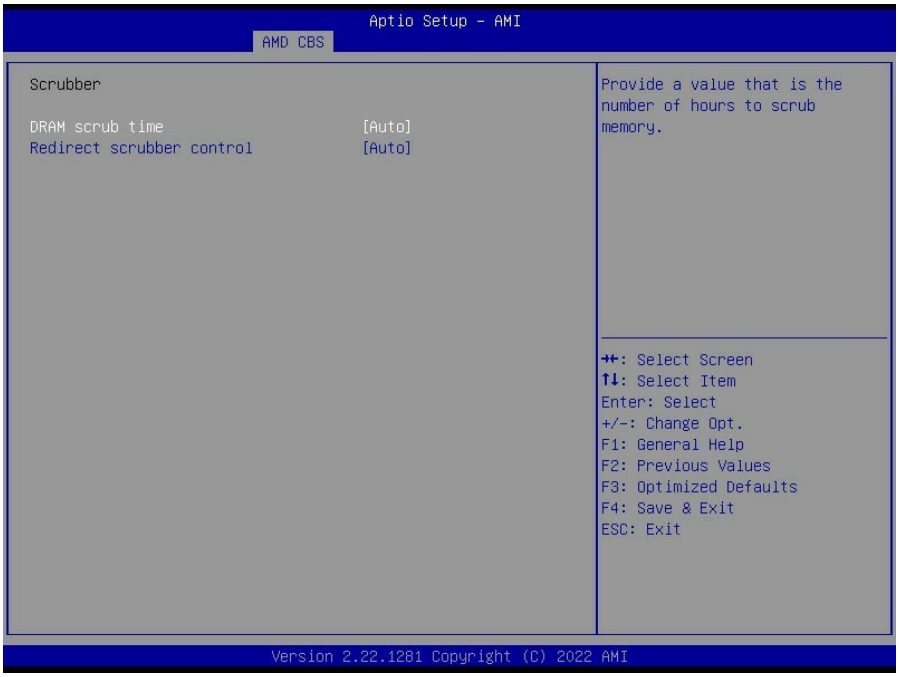
L1 Stream HW Prefetcher
Option to Enable | Disable L1 Stream HW Prefetcher
Disabled / Enabled / **Auto**

L2 Stream HW Prefetcher
Option to Enable | Disable L1 Stream HW Prefetcher
Disabled / Enabled / **Auto**

3.5.2 DF Common Options Submenu



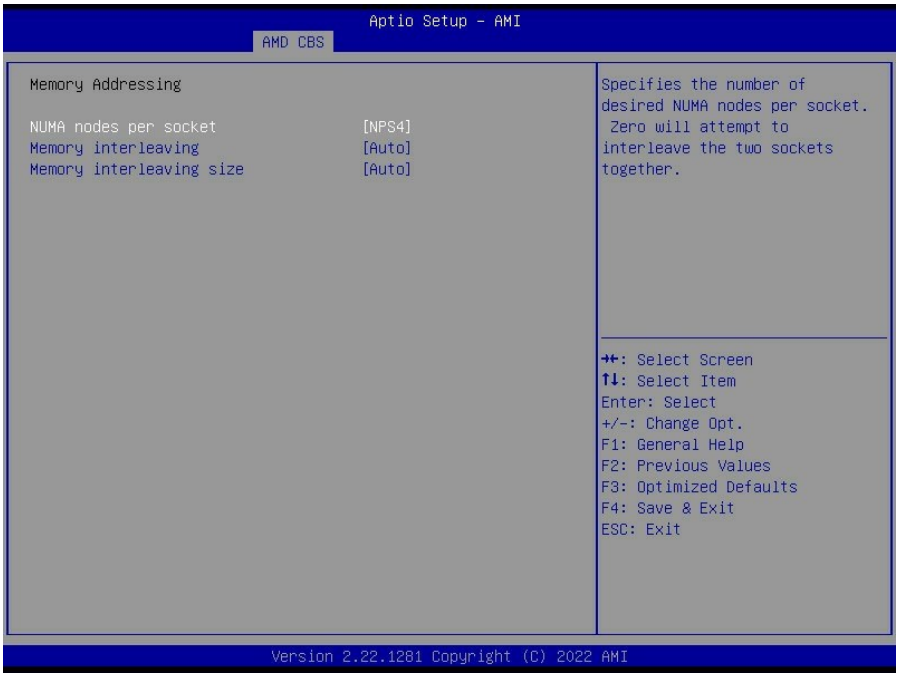
3.5.2.1 Scrubber Submenu



DRAM scrub time
Provide a value that is the number of hours to scrub memory.
Disabled / 1 hours / 4 hours / 8 hours / 16 hours / 24 hours / 48 hours / **Auto**

Redirect scrubber control
Redirect scrubber control
Disabled / Enabled / **Auto**

3.5.2.1 Memory Addressing Submenu



NUMA nodes per socket
Specifies the number of desired NUMA nodes per socket. Zero will attempt to interleave the two sockets together.

NPS0 / NPS1 / NPS2 / **NPS4**

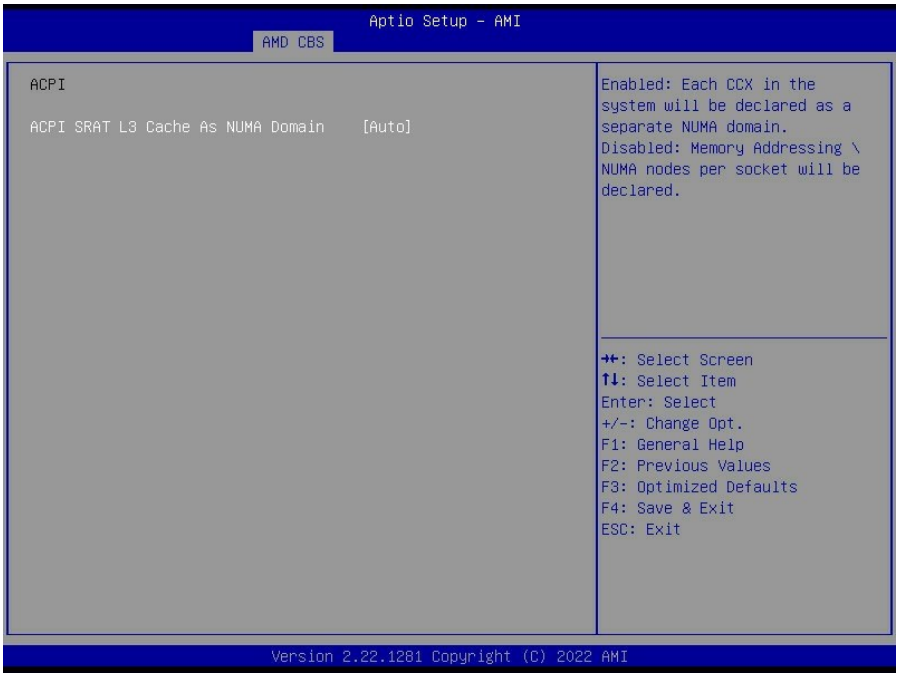
Memory interleaving
Allows for disabling memory interleaving. Note that NUMA nodes per socket will be honored regardless of this setting.

Disabled / **Auto**

Memory interleaving size
Controls the memory interleaving size. The valid values are AUTO, 256 bytes, 512 bytes, 1 kbytes ,2kbytes and 4Kbytes. This determines the starting address of the interleave (bit 8, 9, 10,11 or 12).

256 Bytes / 512 Bytes / 1 KB / 2 KB / 4 KB / **Auto**

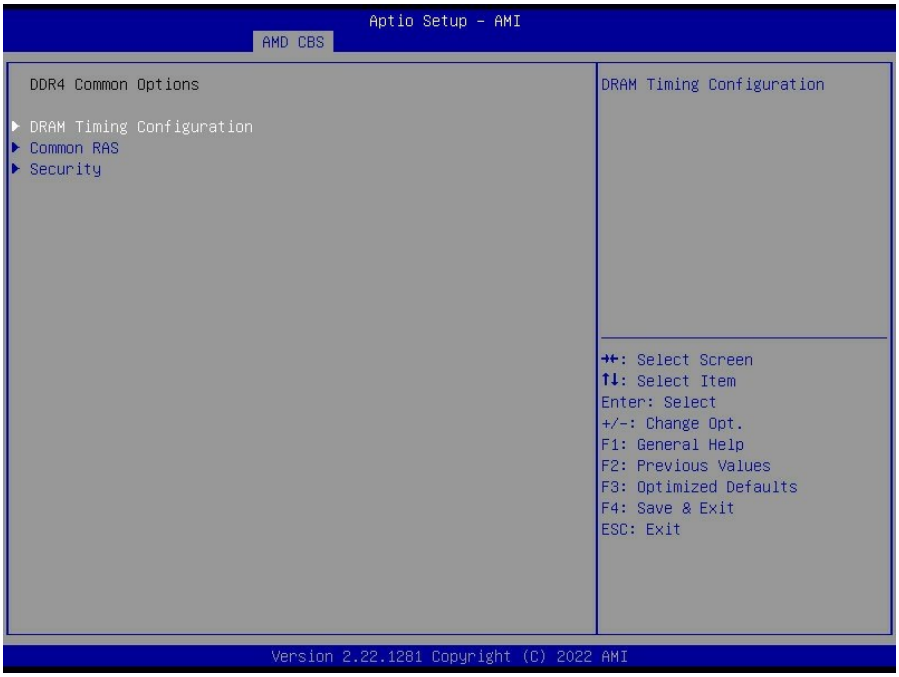
3.5.2.2 ACPI Submenu



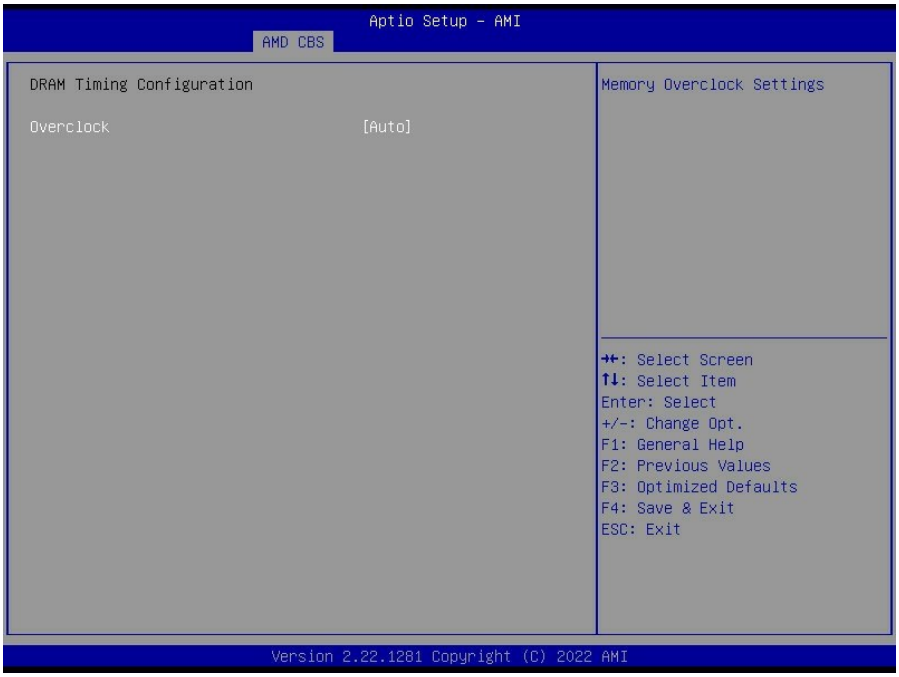
ACPI SRAT L3 Cache As NUMA Domain
Enabled: Each CCX in the system will be declared as a separate NUMA domain.
Disabled: Memory Addressing \ NUMA nodes per socket will be declared.
Disabled / Enabled / **Auto**

3.5.3 UMC Common Options Submenu

3.5.3.1 DDR4 Common Options Submenu

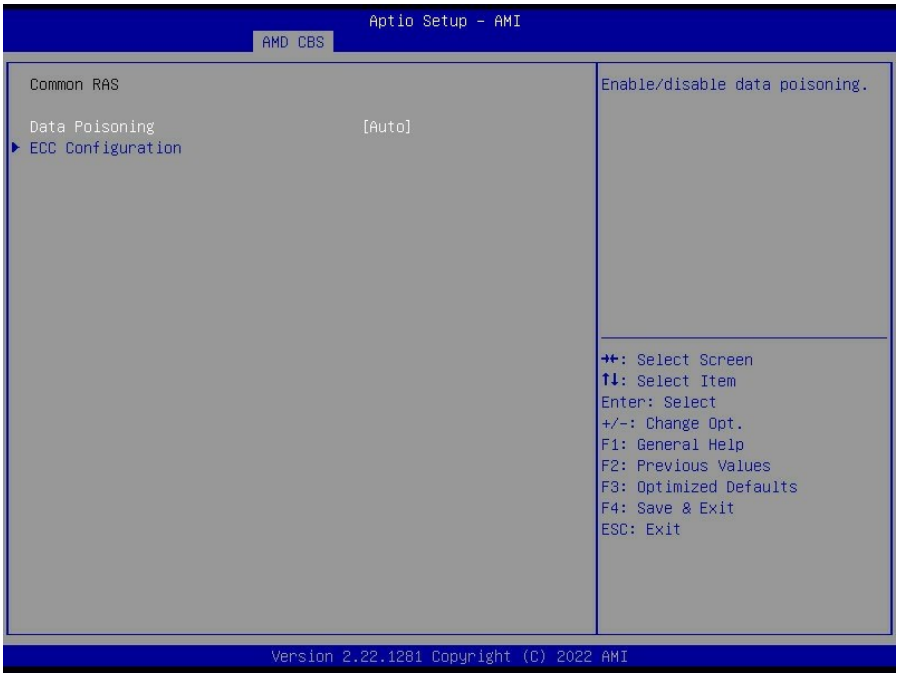


3.5.3.1.1 DRAM Time Configuration Submenu



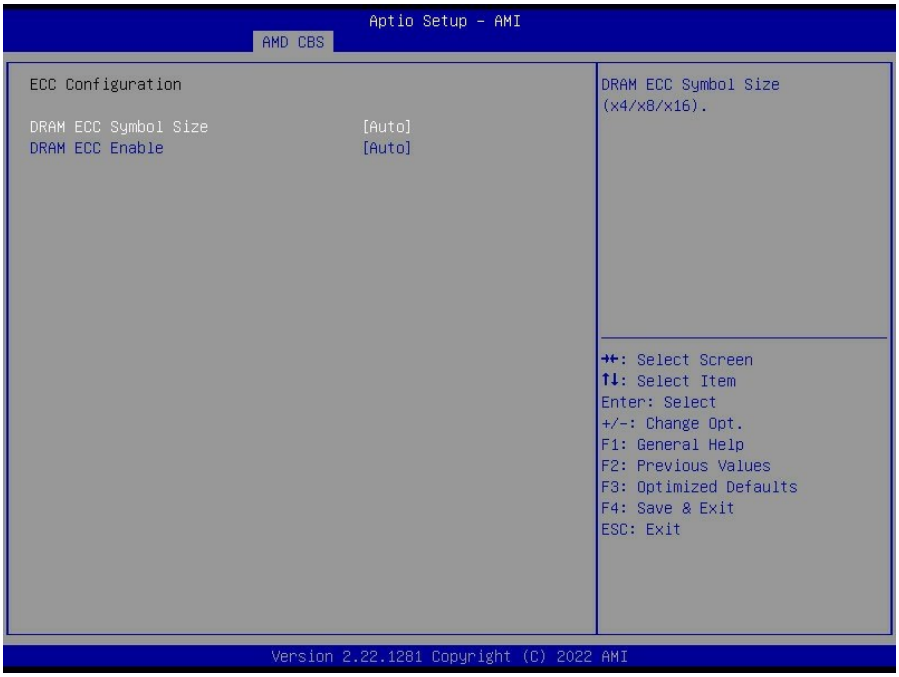
Overclock
Memory Overclock Settings
Auto / Enabled

3.5.3.1.2 Common RAS Configuration Submenu



Data Poisoning
Enable/disable data poisoning.
Disabled / Enabled / **Auto**

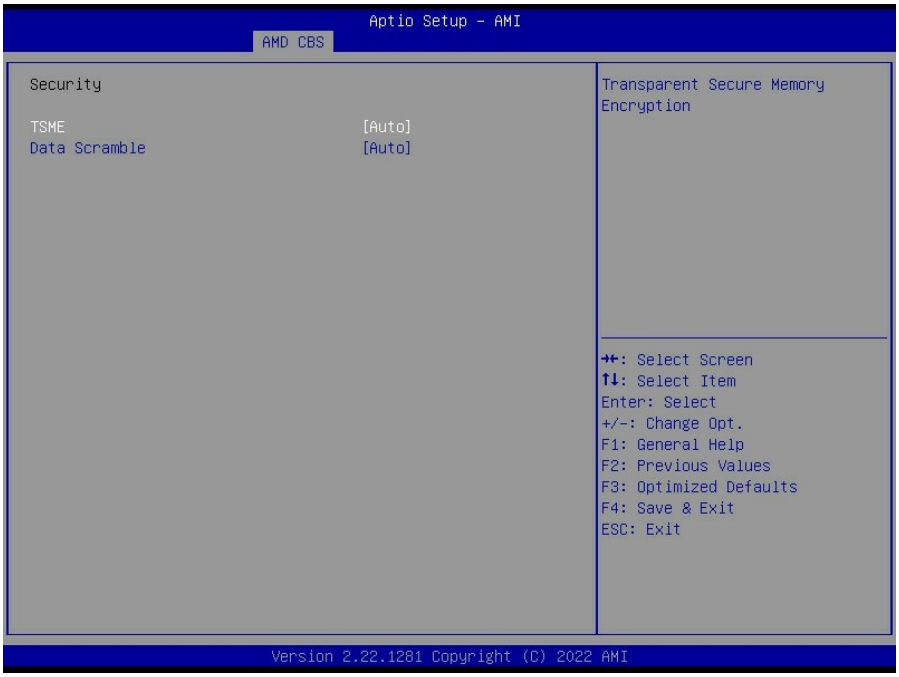
3.5.3.1.2.1 ECC Configuration Submenu



DRAM ECC Symbol Size
DRAM ECC Symbol Size (x4/x8/x16).
X4 / x8 / x16 / **Auto**

DRAM ECC Enable
DRAM ECC Symbol Size (x4/x8/x16).
Disabled / Enabled / **Auto**

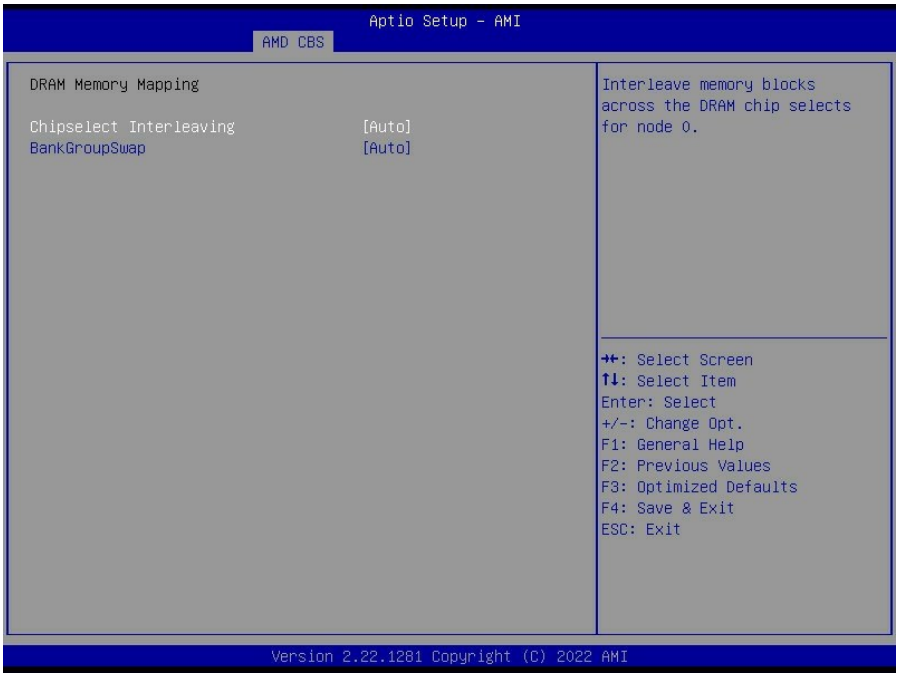
3.5.3.1.3 Security Submenu



TSME
Transparent Secure Memory Encryption
Disabled / Enabled / **Auto**

Data Scramble
Data scrambling
Disabled / Enabled / **Auto**

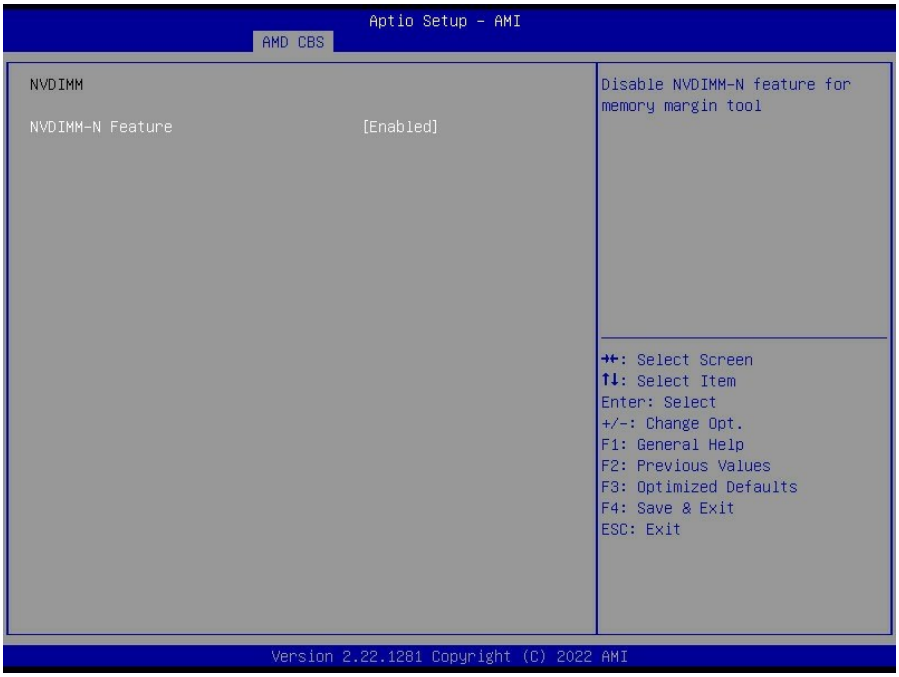
3.5.3.2 DRAM Memory Mapping Submenu



Chipselect Interleaving
Interleave memory blocks across the DRAM chip selects for node 0.
Disabled / **Auto**

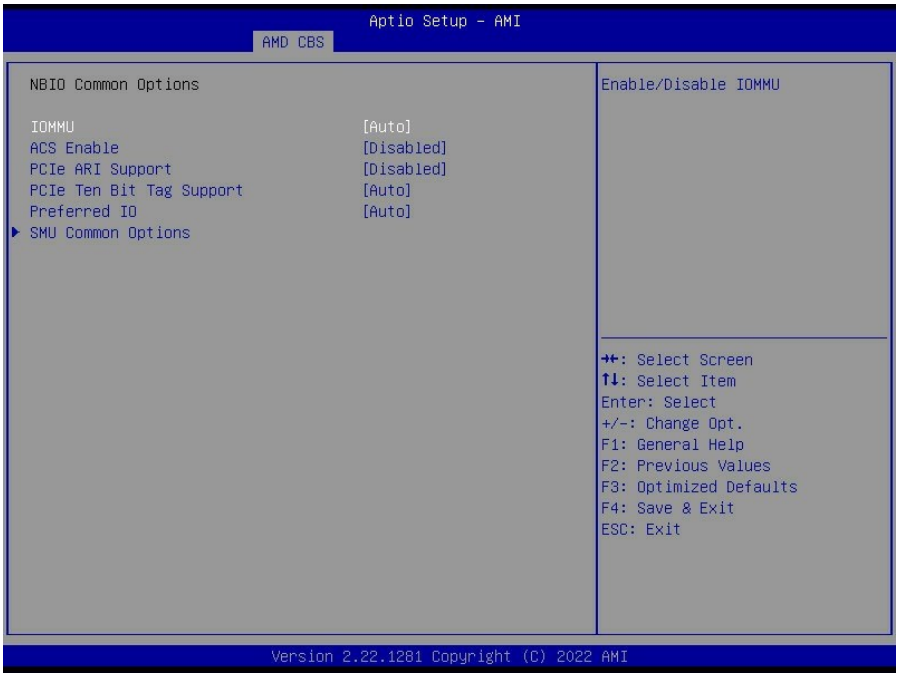
BankGroupSwap
Bank Group Swap settings
Disabled / Enabled / **Auto**

3.5.3.3 NVDIMM Submenu



NVDIMM-N Feature
Disable NVDIMM-N feature for memory margin tool
Enabled / Disabled

3.5.4 NBIO Common Options Submenu



IOMMU
Enable/Disable IOMMU
Disabled / Enabled / **Auto**

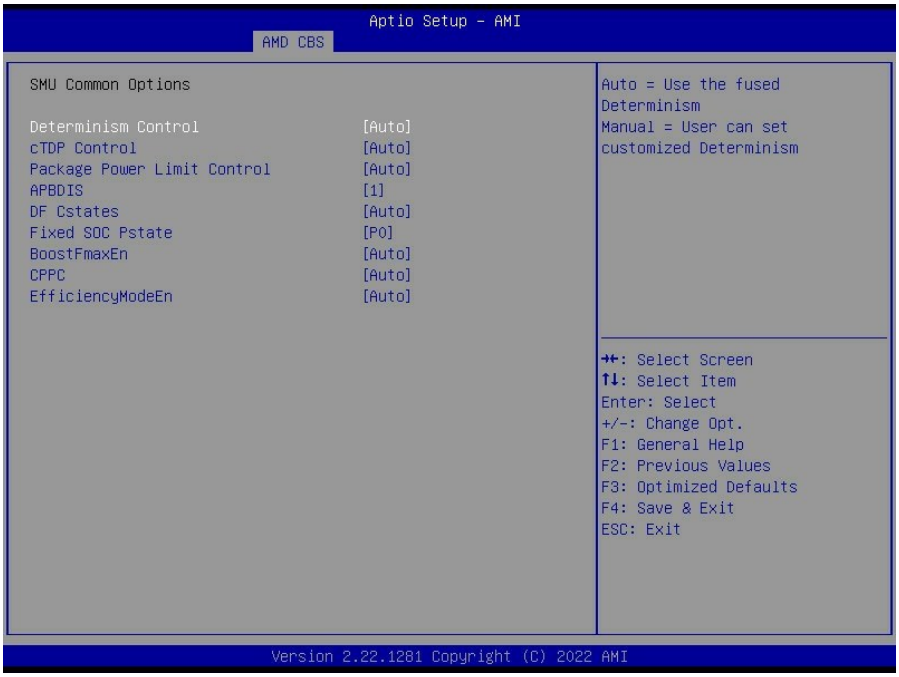
ACS Enable
AER must be enabled for ACS enable to work
Enabled / Disabled / **Auto**

PCIe ARI Support
Enables Alternative Routing-ID Interpretation
Disabled / Enabled / **Auto**

PCIe Ten Bit Tag Support
Enables PCIe ten bit tags for supported devices.
Auto = Disable
Disabled / Enabled / **Auto**

Preferred IO
Preferred IO Select Type
Auto: Default
Disabled / Enabled / **Auto**

3.5.4.1 SMU Common Options Submenu



Determinism Control
Auto = Use the fused Determinism
Manual = User can set customized Determinism
Manual / **Auto**

cTDP Control
Auto = Use the fused TDP
Manual = User can set customized TDP
Manual / **Auto**

Package Power Limit Control
Auto = Use the fused PPT
Manual = User can set customized PPT *** PPTwill be used as the ASIC power limit***
Manual / **Auto**

APBDIS
0 = not APBDIS (mission mode)
1 = APBDIS
0 / **1** / Auto

DF Cstates
Enable or Disable Data Fabric to go to a low-power state when the processor has entered Cx states
Disabled / Enabled / **Auto**

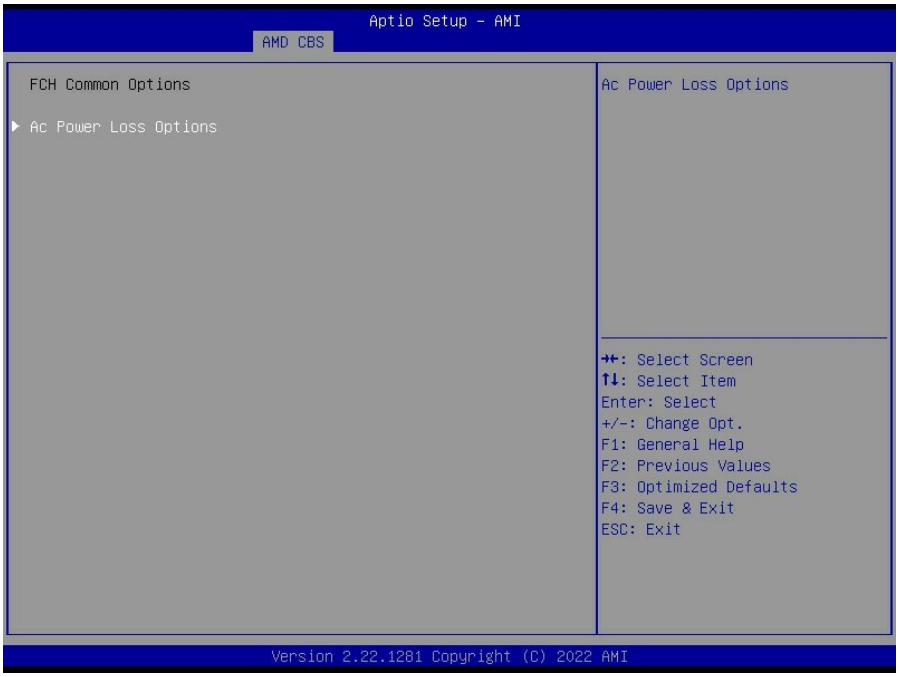
Fixed SOC Pstate
Fixed SOC Pstate
P0 / P1 / P2 / P3 / Auto

BoostFmaxEn
Auto = Use the default max frequency
Manual = User can set the boost max frequency
Manual / **Auto**

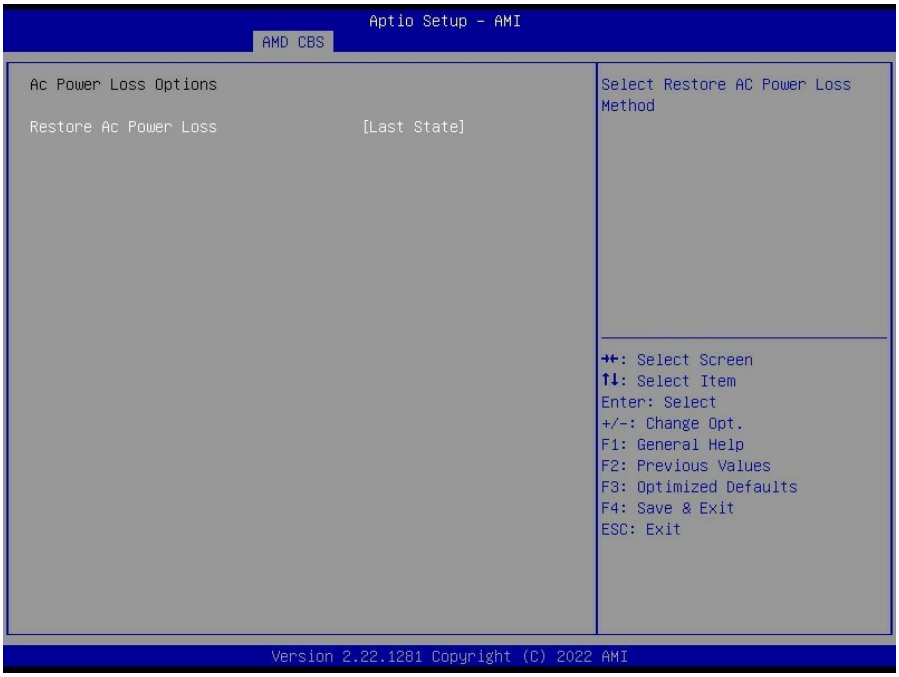
CPPC
Collaborative Processor Performance/Power Control
Disabled / Enabled / **Auto**

EfficiencyModeEn
Auto = use performance optimized settings
Enabled = use power efficiency optimized settings
Auto / Enabled

3.5.5 FCH Common Options Submenu

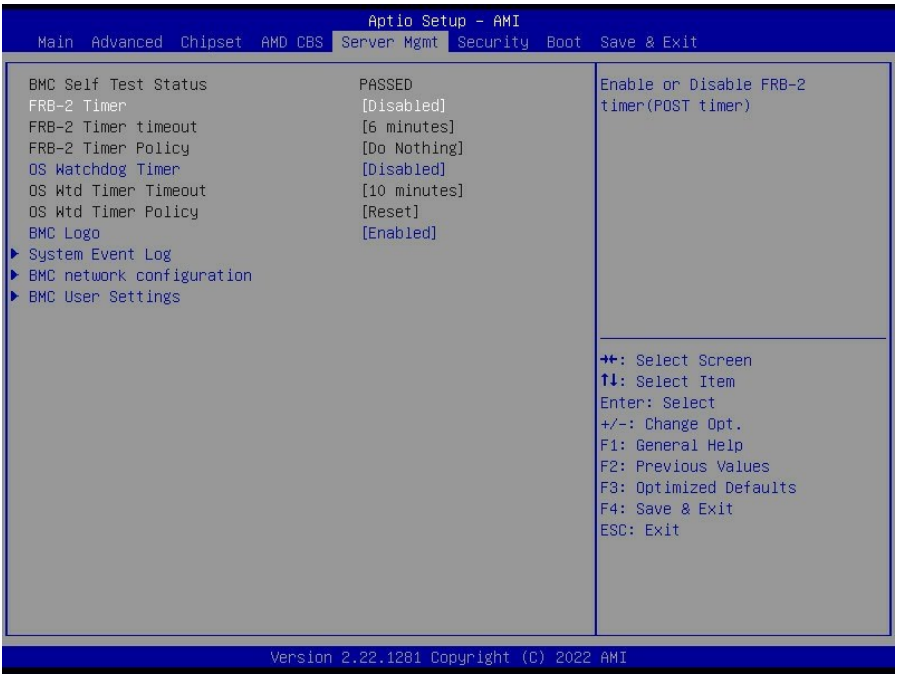


3.5.5.1 AC Power LOSS Options Submenu



Restore Ac Power Loss
Select Ac Loss Control Method
Power Off / Power On / **Last State**

3.6 Server Management



FRB-2 Timer
Enable or Disable FRB-2 timer (POST timer)
Disabled / Enabled
NOTE: When [FRB-2 Timer] is set to [Enabled], the following items will be available.

FRB-2 Timer timeout
Enter value Between 3 to 6 min for FRB-2 Timer Expiration value
3 minutes / 4 minutes / 5 minutes / **6 minutes**

FBR-2 Timer Policy
Configure how the system should respond if the FRB-2 Timer expires. Not available if FRB-2 Timer is disabled.
Do Nothing / Reset / Power Down / Power Cycle

OS Watchdog Timer
If enabled, starts a BIOS timer which can only be shut off by management Software after the OS loads. Helps determine that the OS successfully loaded or follows the OS Boot Watchdog Timer policy.
Disabled / Enabled

NOTE: When [OS Watchdog Timer] is set to [Enabled], the following items will be available.

OS Wtd Timer Timeout
Configure the length of the OS Boot Watchdog Timer. Not available if OS Boot Watchdog Timer is disabled.

5 minutes / **10 minutes** / 15 minutes / 20 minutes

OS Wtd Timer Policy
Configure how the system should respond if the OS Boot Watchdog Timer expires. Not available if OS Boot Watchdog Timer is disabled.

Do Nothing / **Reset** / Power Down / Power Cycle

BMC Logo
Enable or Disable BMC logo

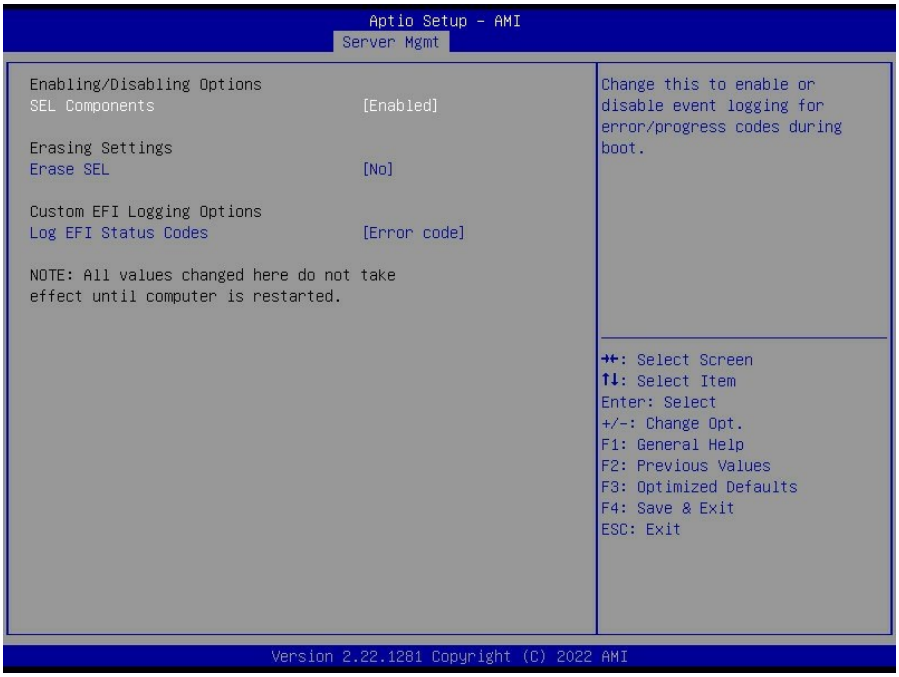
Disabled / **Enabled**

System Event Log
Press<Enter> to change the SEL event log configuration.

BMC network configuration
Configure BMC network parameters

BMC User Settings
Press <Enter> to Add, Delete and Set Privilege level for users.

3.6.1 System Event Log Submenu



SEL Components
Change this to enable or disable all features of System Event Logging during boot.
Enabled / Disabled

Erase SEL
Choose options for erasing SEL.
No / Yes, on next reset / No, on every reset

Log EFI Status Codes
Disable the logging of EFI Status Codes or log only error code or only progress code or both.
Both / Disabled / **Error Code** / Progress Code

3.6.2 BMC Network Configuration Submenu

```
Aptio Setup - AMI
Server Mgmt

BMC network configuration

Configure IPv4 support

Management Port 1
Configuration Address source          [Unspecified]
Current Configuration Address sour    DynamicAddressBmcDhcp
Station IP address                    10.83.33.59
Subnet mask                           255.255.255.0
Station MAC address                   A0-42-3F-4C-B0-2C
Router IP address                     10.83.33.254
Router MAC address                    E4-AA-5D-07-85-7F

Management Port 2                     [Disabled]

Configure IPv6 support

Management Port 1

IPv6 Support                          [Enabled]

Configuration Address source          [Unspecified]
Current Configuration Address sour    DynamicAddressBmcDhcp

Station IPv6 address

Select to configure LAN
channel parameters statically
or dynamically(by BIOS or
BMC). Unspecified option will
not modify any BMC network
parameters during BIOS phase

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

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```

```
Aptio Setup - AMI
Server Mgmt

Management Port 1

IPv6 Support                          [Enabled]

Configuration Address source          [Unspecified]
Current Configuration Address sour    DynamicAddressBmcDhcp

Station IPv6 address
::

Prefix Length
0

IPv6 Router1 IP Address
::

IPv6 address status                   Active
IPv6 DHCP Algorithm                   DHCPv6

Management Port 2

IPv6 Support                          [Enabled]

Configuration Address source          [Unspecified]

Enable or Disable LAN2 IPv6
Support

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

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```

Configure IPV4 support
Management Port 1
Configuration Address Source
Select the configure LAN channel parameters statically or dynamically (by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase.

Unspecified / Static / DynamicBmcDhcp / DynamicBmcNonDhcp

Management Port 2
Enable/Disable BMC Share NIC

Disabled / Enabled

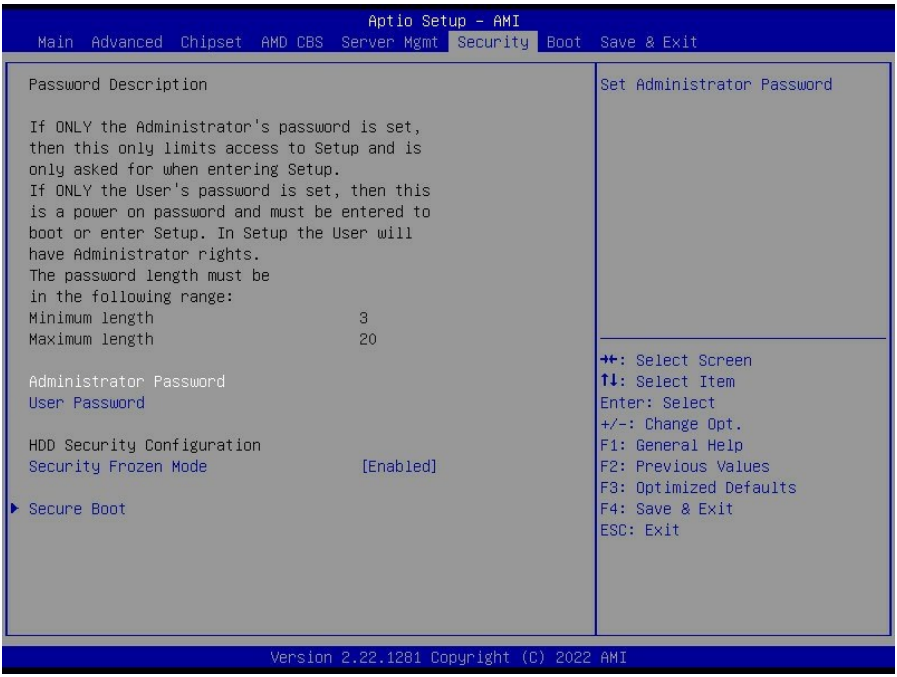
Configure IPV6 support
Management Port 1
IPV6 Support
Enable or Disable LAN1 IPV6 Support

Disabled / **Enabled**

Management Port 2
IPV6 Support
Enable or Disable LAN2 IPV6 Support

Disabled / **Enabled**

3.7 Security



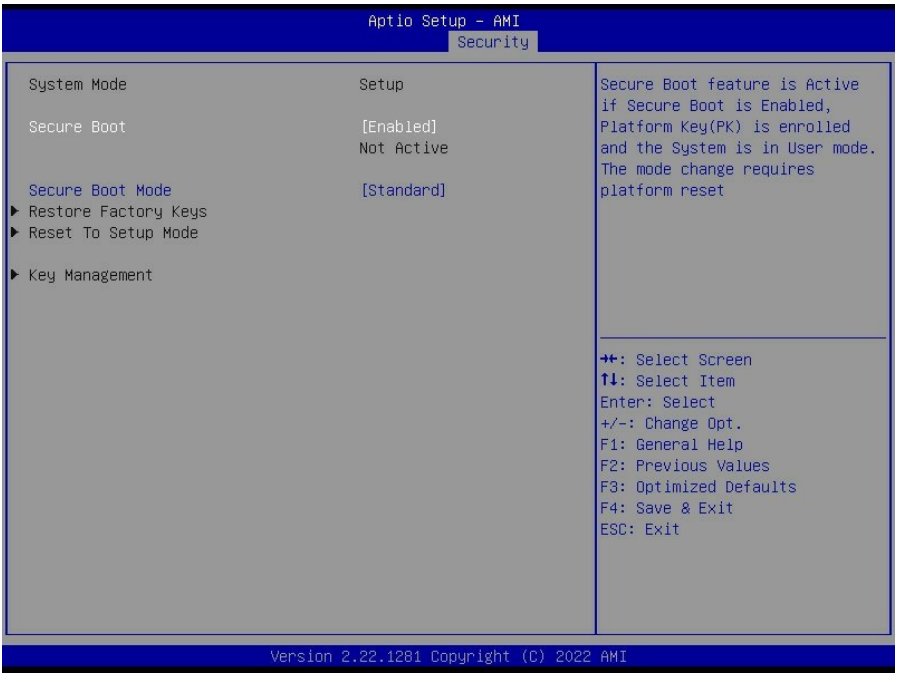
Administrator Password
Set Administrator Password.

User Password
Set User Password.

Security Frozen Mode
Enable or disable HDD security freeze lock.
Disable to support secure erase function.
Disabled / **Enabled**

Secure Boot
Customizable Secure Boot settings

3.7.1 Secure Boot Configuration Submenu



Secure Boot
Secure boot feature is Active if Secure Boot is Enabled, Platform Key(PK) is enrolled and the System is in User mode. The mode change requires platform reset System mode is User/Deployed, and CSM function is disabled

Enabled / Disabled

Secure Boot Mode
Secure Boot mode selector. 'Custom' mode enables users to change Image execution policy and manage secure boot keys.

Standard / Custom

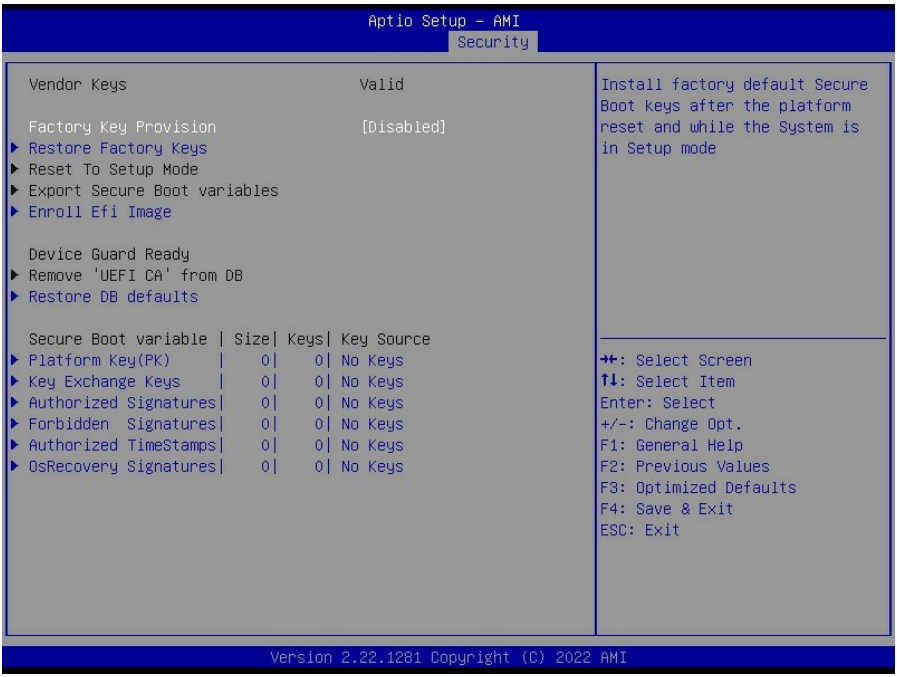
NOTE: When Secure Boot Mode was set to [Custom],the following items will be available to set up.

Restore Factory Keys
Force System to User Mode. Install factory default Secure Boot key databases

Reset To Setup Mode
Delete all Secure Boot Key databases from NVRAM

Key Management
Enables expert users to modify Secure Boot Policy variables without full authentication

3.7.2 Key Management



Factory Keys Provision
Install factory default Secure Boot Keys after the platform reset and while the System is in Setup Mode.
Enabled / **Disabled**

Restore Factory Keys
Force System to User Mode. Install Factory Default Secure Boot key databases.

Reset To Setup Mode
Delete all Secure Boot Key database from NVRAM

Export Secure Boot variable
Copy NVRAM content of Secure Boot variables to files in a root folder on a file system device

Enroll Efi Image
Allow the image to run in Secure Boot mode. Enroll SHA256 hash certificate of a PE image into Autorized Signature Database (db)

Remove 'UEFI CA' from DB
Device Guard ready system must not list 'Microsoft' UEFI CA' Certificate in Authorized Signature database (db)

Restore DB defaults
Restore DB variable to factory defaults

Platform Key (PK)
Enroll Factory Defaults or load certificates from a file:
1. Public Key Certificate in:
a) EFI_SIGNATURE_LIST
b) EFI_CERT_X509 (DER encoded)
c) EFI_CERT_RSA2048 (bin)
d) EFI_CERT_SHA256,384,512
2. Authenticated UEFI Variable
3. EFI PE/COFF Image(SHA256)
Key Source:
Default, External, Mixed, Test
Set New

Key Exchange Keys
Enroll Factory Defaults or load certificates from a file:
1. Public Key Certificate in:
a) EFI_SIGNATURE_LIST
b) EFI_CERT_X509 (DER encoded)
c) EFI_CERT_RSA2048 (bin)
d) EFI_CERT_SHA256,384,512
2. Authenticated UEFI Variable
3. EFI PE/COFF Image(SHA256)
Key Source:
Default, External, Mixed, Test

Authorized Signatures
Enroll Factory Defaults or load certificates from a file:
1. Public Key Certificate in:
a) EFI_SIGNATURE_LIST
b) EFI_CERT_X509 (DER encoded)
c) EFI_CERT_RSA2048 (bin)
d) EFI_CERT_SHA256,384,512
2. Authenticated UEFI Variable
3. EFI PE/COFF Image(SHA256)
Key Source:
Default, External, Mixed, Test

Forbidden Signatures
Enroll Factory Defaults or load certificates from a file:
1. Public Key Certificate in:
a) EFI_SIGNATURE_LIST
b) EFI_CERT_X509 (DER encoded)
c) EFI_CERT_RSA2048 (bin)
d) EFI_CERT_SHA256,384,512
2. Authenticated UEFI Variable
3. EFI PE/COFF Image(SHA256)
Key Source:
Default, External, Mixed, Test

Authorized TimeStamps
Enroll Factory Defaults or load certificates from a file:
1. Public Key Certificate in:
a) EFI_SIGNATURE_LIST
b) EFI_CERT_X509 (DER encoded)
c) EFI_CERT_RSA2048 (bin)
d) EFI_CERT_SHA256,384,512
2. Authenticated UEFI Variable
3. EFI PE/COFF Image(SHA256)
Key Source:
Default, External, Mixed, Test

OsRecovery Signatures
Enroll Factory Defaults or load certificates from a file:
1. Public Key Certificate in:
a) EFI_SIGNATURE_LIST
b) EFI_CERT_X509 (DER encoded)
c) EFI_CERT_RSA2048 (bin)
d) EFI_CERT_SHA256,384,512
2. Authenticated UEFI Variable
3. EFI PE/COFF Image(SHA256)
Key Source:
Default, External, Mixed, Test

3.8 Boot

```
                              Aptio Setup - AMI
   Main  Advanced  Chipset  AMD CBS  Server Mgmt  Security  Boot  Save & Exit

   Setup Prompt Timeout                1                        Remove an EFI boot option from
   Bootup NumLock State                [Off]                    the boot order

   Quiet Boot                          [Disabled]
   Wait For 'ESC' If Error             [Disabled]
   Endless boot                        [Disabled]

   Boot Option Priorities
   Boot Option #1                      [UEFI:  USB, Partit...]
   Boot Option #2                      [NVMe3 #8100 SAMSUN...]
   Boot Option #3                      [NVMe2 #8200 SAMSUN...]
   Boot Option #4                      [NVMe #C400 SAMSUNG...]
   Boot Option #5                      [NVMe #C500 SAMSUNG...]
   Boot Option #6                      [FlexBoot v3.6.502 ...]   →←: Select Screen
   Boot Option #7                      [FlexBoot v3.6.502 ...]   ↑↓: Select Item
   Boot Option #8                      [IBA 40G Slot C200 ...]   Enter: Select
   Boot Option #9                      [IBA 40G Slot C201 ...]   +/-: Change Opt.
   Boot Option #10                     [AMI Virtual CDROM0...]   F1: General Help
   Boot Option #11                     [AMI Virtual HDisk0...]   F2: Previous Values
   Boot Option #12                     [ USB]                    F3: Optimized Defaults
   Boot Option #13                     [UEFI: Built-in EFI...]   F4: Save & Exit
                                                                 ESC: Exit

 ▶ Add New Boot Option
 ▶ Delete Boot Option

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```

Setup Prompt Timeout
Number of seconds to wait for setup activation key.
65535 (0xFFFF) means indefinite waiting.

Bootup NumLock State
Select the keyboard NumLock state.
Off / On

Quiet Boot
Enable or disable Quiet Boot option.
Disabled / Enabled

Endless Boot
Enabled or Disabled Endless boot
Disabled / Enabled

Wait for "ESC" if Error
Enabled or Disabled Wait ESC key Function. When chassis intrusion, CMOS Clear or BMC not Response.
Disabled / Enabled

Boot Option Priorities
Boot Option #1
Sets the system boot order.
Device Name / Disabled

Add New Boot Option
Add a new EFI boot option to the boot order

Delete Boot Option
Remove an EFI boot option from the boot order

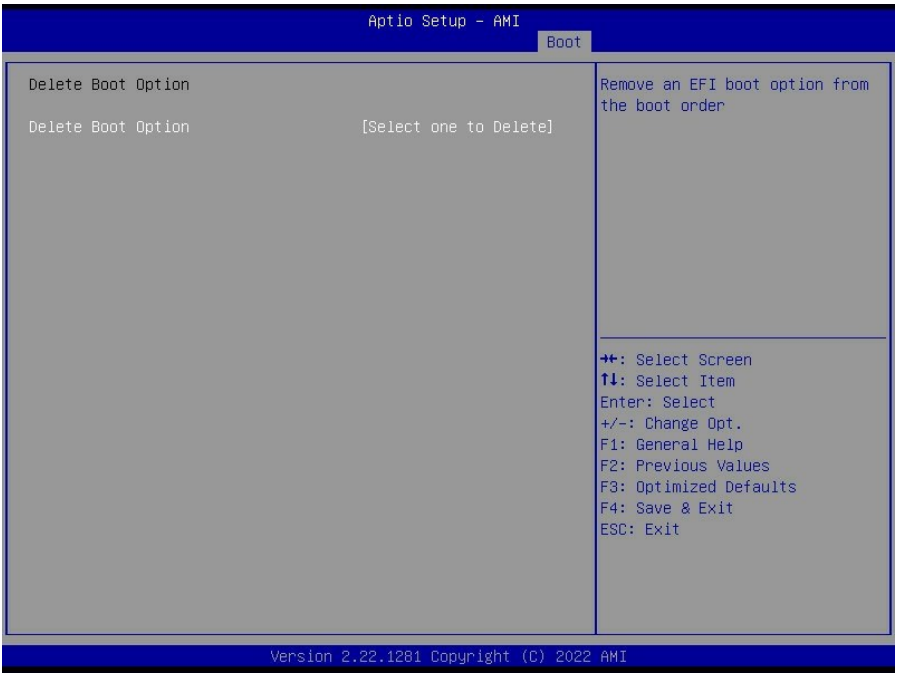
3.8.1 Add New Boot Option Configuration

Add boot option
Create new boot option

Path for boot option
Enter the path to the boot option in the format fs0:\path\filename.efi

Create
Create the newly formed boot option

3.8.2 Delete Boot Option Configuration

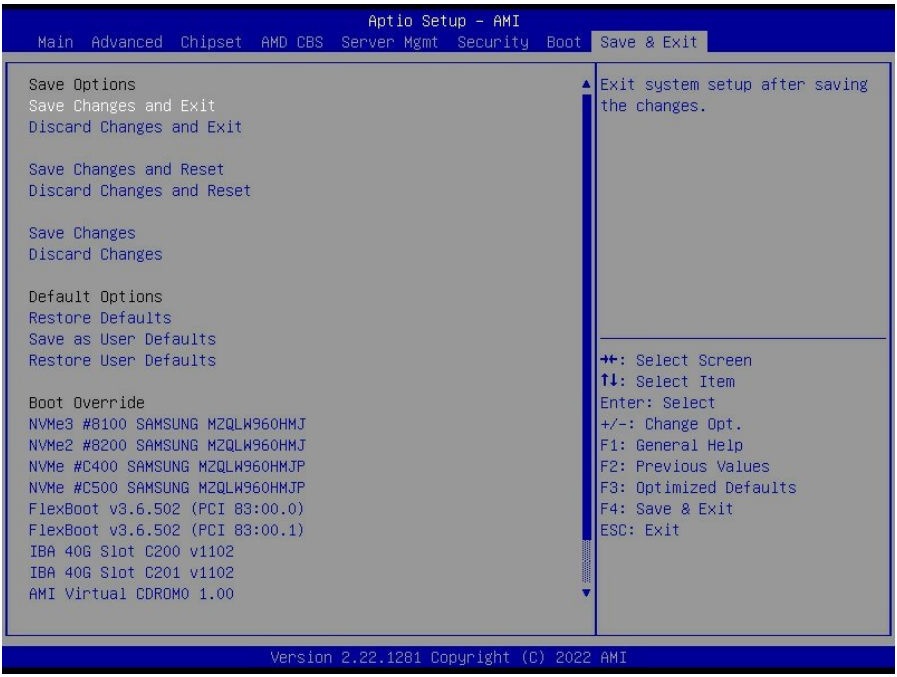


Delete Boot Option

Remove an EFI boot option from the boot order.

Device Name / **Select one to Delete**

3.9 Save & Exit



Save Changes and Exit
Exit system setup after saving the changes.

Discard Changes and Exit
Exit system setup without saving any changes.

Save Changes and Reset
Reset the system after saving the changes.

Discard Changes and Reset
Reset system setup without saving any changes.

Save Changes
Save changes done so far to any of the setup options.

Discard Changes
Discard changes done so far to any of the setup options.

Restore Defaults
Restore/Load Default values for all the setup options.

Save as User Defaults
Save the changes done so far as User Defaults.

Restore User Defaults
Restore the User Defaults to all the setup options.

Boot Override
Device Name

Chapter 4: Diagnostics

NOTE: if you experience problems with setting up your system, always check the following things in the following order:

Memory, Video, CPU

By checking these items, you will most likely find out what the problem might have been when setting up your system. For more information on troubleshooting, check the TYAN website at http://www.tyan.com.

4.1 Flash Utility

Every BIOS file is unique for the motherboard it was designed for. For Flash Utilities, BIOS downloads, and information on how to properly use the Flash Utility with your motherboard, please check the TYAN web site at http://www.tyan.com

NOTE: Please be aware that by flashing your BIOS, you agree that in the event of a BIOS flash failure, you must contact your dealer for a replacement BIOS. There are no exceptions. TYAN does not have a policy for replacing BIOS chips directly with end users. In no event will TYAN be held responsible for damages done by the end user.

4.2 AMIBIOS Post Code (Aptio)

The POST code checkpoints are the largest set of checkpoints during the BIOS pre-boot process. The following table describes the type of checkpoints that may occur during the POST portion of the BIOS:

Checkpoint Ranges

Status Code Range	Description
0x01 – 0x0B	SEC execution
0x0C – 0x0F	Sec errors
0x10 – 0x2F	PEI execution up to and including memory detection
0x30 – 0x4F	PEI execution after memory detection
0x50 – 0x5F	PEI errors
0x60 – 0x8F	DXE execution up to BDS
0x90 – 0xCF	BDS execution
0xD0 – 0xDF	DXE errors
0xE0 – 0xE8	S3 Resume (PEI)
0xE9 – 0xEF	S3 Resume errors (PEI)
0xF0 – 0xF8	Recovery (PEI)
0xF9 – 0xFF	Recovery errors (PEI)

Standard Checkpoints

SEC Phase

Status Code	Description
0x00	Note used
Progress Codes	
0x01	Power on. Reset type detection (soft/hard).
0x02	AP initialization before microcode loading
0x03	North Bridge initialization before microcode loading
0x04	South Bridge initialization before microcode loading
0x05	OEM initialization before microcode loading
0x06	Microcode loading
0x07	AP initialization after microcode loading
0x08	North Bridge initialization after microcode loading
0x09	South Bridge initialization after microcode loading
0x0A	OEM initialization after microcode loading
0x0B	Cache initialization

SEC Error Codes	
0x0C – 0x0D	Reserved for future AMI SEC error codes
0x0E	Microcode not found
0x0F	Microcode not found

SEC Phase

None

PEI Phase

Status Code	Description
Progress Codes	
0x10	PCI Core is started
0x11	Pre-memory CPU initialization is started
0x12	Pre-memory CPU initialization (CPU module specific)
0x13	Pre-memory CPU initialization (CPU module specific)
0x14	Pre-memory CPU initialization (CPU module specific)
0x15	Pre-memory North Bridge initialization is started
0x16	Pre-Memory North Bridge initialization (North Bridge module specific)
0x17	Pre-memory North Bridge initialization (North Bridge module specific)
0x18	Pre-Memory North Bridge initialization (North Bridge module specific)
0x19	Pre-memory South Bridge initialization is started
0x1A	Pre-Memory South Bridge initialization (South Bridge module specific)
0x1B	Pre-memory South Bridge initialization (South Bridge module specific)
0x1C	Pre-Memory South Bridge initialization (South Bridge module specific)
0x1D – 0x2A	OEM pre-memory initialization codes
0x2B	Memory initialization. Serial Presence Detect (SPD) data reading
0x2C	Memory initialization. Memory presence detection
0x2D	Memory initialization. Programming memory timing information
0x2E	Memory initialization. Configuring memory
0x2F	Memory initialization (other)
0x30	Reserved for ASL (see ASL Status Codes section below)
0x31	Memory Installed
0x32	CPU post-memory initialization is started.
0x33	CPU post-memory initialization. Cache initialization
0x34	CPU post-memory initialization. Application Processor(s) (AP) initialization

Status Code	Description
0x35	CPU post-memory initialization. Boot Strap Processor (BSP) selection
0x36	CPU post-memory initialization. System Management Mode (SMM) initialization
0x37	Post-Memory North Bridge initialization is started.
0x38	Post-Memory North Bridge initialization (North Bridge module specific)
0x39	Post-Memory North Bridge initialization (North Bridge module specific)
0x3A	Post-Memory North Bridge initialization (North Bridge module specific)
0x3B	Post-Memory South Bridge initialization is started
0x3C	Post-Memory South Bridge initialization (South Bridge module specific)
0x3D	Post-Memory South Bridge initialization (South Bridge module specific)
0x3E	Post-Memory South Bridge initialization (South Bridge module specific)
0x3F – 0x4E	OEM post memory initialization codes
0x4F	DXE PIL is started
PCI Error Codes	
0x50	Memory initialization error. Invalid memory type or incompatible memory speed
0x51	Memory initialization error. SPD reading has failed.
0x52	Memory initialization error. Invalid memory size or memory modules do not match.
0x53	Memory initialization error. No usable memory detected
0x54	Unspecified memory initialization error
0x55	Memory not installed
0x56	Invalid CPU type or speed
0x57	CPU mismatch
0x58	CPU self test failed or possible CPU cache error
0x59	CPU microcode is not found or microcode update is failed.
0x5A	Internal CPU error
0x5B	Reset PPI is not available.
0x5C – 0x5F	Reserved for future AMI error codes
S3 Resume Progress Codes	
0xE0	S3 Resume is started (S3 Resume PPI is called by the DXE IPL).
0xE1	S3 Boot Script execution
0xE2	Video repost
0xE3	OS S3 wake vector call
0xE4 – 0xE7	Reserved for future AMI progress codes

Status Code	Description
S3 Resume Error Codes	
0xE8	S3 Resume failed
0xE9	S3 Resume PPI not found
0xEA	S3 Resume Boot Script error
0xEB	S3 OS wake error
0xEC – 0xEF	Reserved for future AMI error codes
Recovery Progress Codes	
0xF0	Recovery condition triggered by firmware (Auto recovery)
0xF1	Recovery condition triggered by user (forced recovery)
0xF2	Recovery process started
0xF3	Recovery firmware image is found.
0xF4	Recovery firmware image is loaded.
0xF5 – 0xF7	Reserved for future AMI progress codes
Recovery Error Codes	
0xF8	Recovery PPI is not available.
0xF9	Recovery capsule is not found.
0xFA	Invalid recovery capsule
0xFB – 0xFF	Reserved for future AMI error codes

PEI Beep Codes

# of Beeps	Description
Progress Codes	
1	Memory not installed
1	Memory was installed twice (installPEIMemory routine in PEI Core called twice).
2	Recovery started
3	DXEIPL was not found.
3	DXE Core Firmware Volume was not found.
4	Recovery failed
4	S3 Resume failed
7	Reset PPI is not available.

DXE Phase

Status Code	Description
0x60	DXE Core is started.
0x61	NVRAM initialization
0x62	Installation of the South Bridge Runtime Services

Status Code	Description
0x63	CPU DXE initialization is started.
0x64	CPU DXE initialization (CPU module specific)
0x65	CPU DXE initialization (CPU module specific)
0x66	CPU DXE initialization (CPU module specific)
0x67	CPU DXE initialization (CPU module specific)
0x68	PCI host bridge initialization
0x69	North Bridge DXE initialization is started.
0x6A	North Bridge DXE SMM initialization is started.
0x6B	North Bridge DXE initialization (North Bridge module specific)
0x6C	North Bridge DXE initialization (North Bridge module specific)
0x6D	North Bridge DXE initialization (North Bridge module specific)
0x6E	North Bridge DXE initialization (North Bridge module specific)
0x6F	North Bridge DXE initialization (North Bridge module specific)
0x70	South Bridge DXE initialization is started.
0x71	South Bridge DXE SMM initialization is started.
0x72	South Bridge devices initialization
0x73	South Bridge DXE initialization (South Bridge module specific)
0x74	South Bridge DXE initialization (South Bridge module specific)
0x75	South Bridge DXE initialization (South Bridge module specific)
0x76	South Bridge DXE initialization (South Bridge module specific)
0x77	South Bridge DXE initialization (South Bridge module specific)
0x78	ACPI module initialization
0x79	CSM initialization
0x7A – 0x7F	Reserved for future AMI DXE codes
0x80 – 0x8F	OEM DXE initialization codes
0x90	Boot Device Selection (BDS) phase is started
0x91	Driver connecting is started
0x92	PCI Bus initialization is started
0x93	PCI Bus Hot Plug Controller initialization
0x94	PCI Bus Enumeration
0x95	PCI BUS Request Resources
0x96	PCI Bus Assign Resources
0x97	Console output devices connect
0x98	Console Input devices connect
0x99	Super IO initialization
0x9A	USB initialization is started.

Status Code	Description
0x9B	USB Reset
0x9C	USB Detect
0x9D	USB Enable
0x9E -0x9F	Reserved for future AMI codes
0xA0	IDE initialization is started
0xA1	IDE Reset
0xA2	IDE Detect
0xA3	IDE Enable
0xA4	SCSI initialization is started.
0xA5	SCSI Reset
0xA6	SCSI Detect
0xA7	SCSI Enable
0xA8	Setup Verifying Password
0xA9	Start of Setup
0xAA	Reserved for ASL (see ASL Status Codes section below)
0xAB	Setup Input Wait
0xAC	Reserved for ASL (see ASL Status Codes section below)
0xAD	Ready To Boot event
0xAE	Legacy Boot event
0xAF	Exit Boot Services event
0xB0	Runtime Set Virtual Address MAP Begin
0xB1	Runtime Set Virtual Address MAP End
0xB2	Legacy Option ROM initialization
0xB3	System Reset
0xB4	USB hot plug
0xB5	PCI bus hot plug
0xB6	Clean-up of NVRAM
0xB7	Configuration Reset (reset of NVRAM settings)
0xB8 – 0xBF	Reserved for future AMI codes
0xC0 – 0xCF	OEM BDS initialization codes
DXE Error Codes	
0xD0	CPU initialization error
0xD1	North Bridge initialization error
0xD2	South Bridge initialization error
0xD3	Some of the Architectural Protocols are not available
0xD4	PCI resource allocation error. Out of Resources

Status Code	Description
0xD5	No Space for Legacy Option ROM
0xD6	No Console Output Devices are found.
0xD7	No Console Input Devices are found.
0xD8	Invalid password
0xD9	Error loading Boot Option (LoadImage returned error)
0xDA	Boot Option is failed (StartImage returned error).
0xDB	Flash update is failed.
0xDC	Reset protocol is not available.

DXE Beep Codes

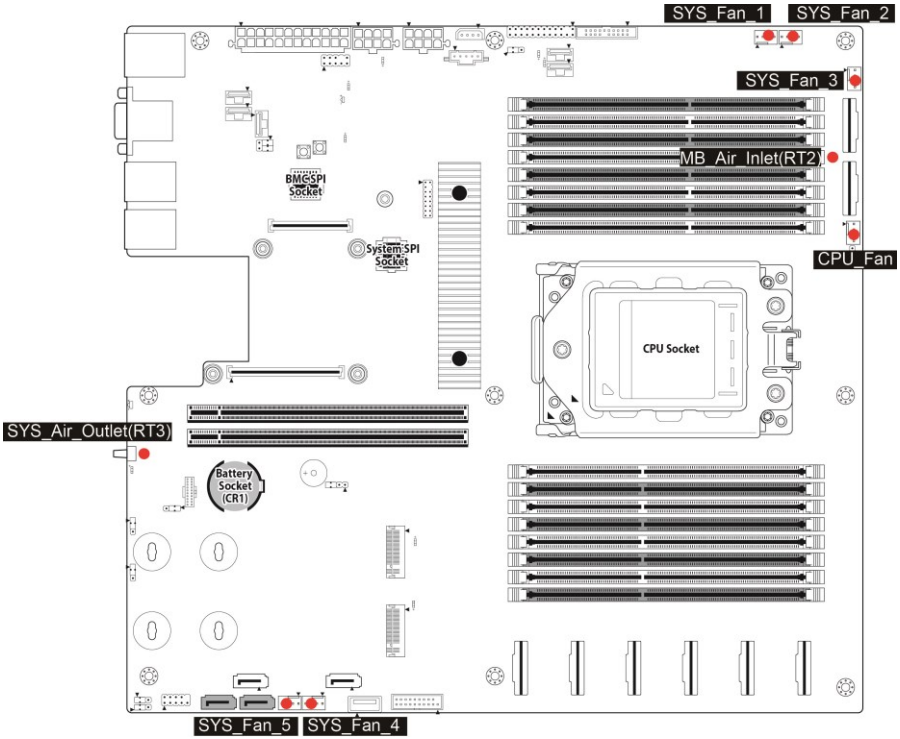
# of Beeps	Description
1	Invalid password
4	Some of the Architectural Protocols are not available.
5	No Console Output Devices are found.
5	No Console Input Devices are found.
6	Flash update is failed.
7	Reset protocol is not available.
8	Platform PCI resource requirements cannot be met.

ACPI/ASL Checkpoints

Status Code	Description
0x01	System is entering S1 sleep state.
0x02	System is entering S2 sleep state.
0x03	System is entering S3 sleep state.
0x04	System is entering S4 sleep state.
0x05	System is entering S5 sleep state.
0x10	System is waking up from the S1 sleep state.
0x20	System is waking up from the S2 sleep state.
0x30	System is waking up from the S3 sleep state.
0x40	System is waking up from the S4 sleep state.
0xAC	System has transitioned into ACPI mode. Interrupt controller is in APIC mode.
0xAA	System has transitioned into ACPI mode. Interrupt controller is in APIC mode.

Appendix I: Fan and Temp Sensors

This section aims to help readers identify the locations of some specific FAN and Temp Sensors on the motherboard. A table of BIOS Temp sensor name explanation is also included for readers' reference.



NOTE: The red dot indicates the sensor.

Fan and Temp Sensor Location:

1. Fan Sensor: It is located in the third pin of the fan connector, which detects the fan speed (rpm)
2. Temp Sensor: SYS_Air_Outlet(RT3) ,and MB_Air_Inlet(RT2) etc. They detect the system temperature around.
   NOTE: The system temperature is measured in a scale defined by **AMD**, not in Fahrenheit or Celsius.

BIOS Temp Sensor Name Explanation:

```
Aptio Setup - AMI
Advanced

Pc Health Status
-------------------------------------------------------------
ID#   NAME                 READING  UNIT STATUS
01 CPU_Tctl_Value        : 36       °C   OK
32 MB_Air_Inlet          : 32       °C   OK
31 SYS_Air_Outlet        : 33       °C   OK
30 SYS_Air_Inlet         : 27       °C   OK
20 CPU_CORE_MOSFET       : 35       °C   OK
27 CPU_SOC_MOSFET        : 34       °C   OK
21 DIMM_MOSFET_1         : 36       °C   OK
22 DIMM_MOSFET_2         : 35       °C   OK
50 OCP_LAN_TEMP          : 47       °C   OK
4E PCIE_Aera_L           : N/A      °C
4F PCIE_Aera_R           : 35       °C   OK
40 NVME_SSD_0            : N/A      °C
41 NVME_SSD_1            : N/A      °C
42 NVME_SSD_2            : 38       °C   OK
43 NVME_SSD_3            : 36       °C   OK
44 NVME_SSD_4            : N/A      °C
45 NVME_SSD_5            : N/A      °C
46 NVME_SSD_6            : N/A      °C
47 NVME_SSD_7            : N/A      °C
48 NVME_SSD_8            : N/A      °C
49 NVME_SSD_9            : N/A      °C
4A NVME_SSD_10           : N/A      °C

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

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```

```
Aptio Setup - AMI
Advanced

4A NVME_SSD_10           : N/A      °C
4B NVME_SSD_11           : N/A      °C
4C M.2/M.3_NVMe_1        : N/A      °C
4D M.2/M.3_NVMe_2        : N/A      °C
10 CPU_UMC0_CH_A0        : N/A      °C
11 CPU_UMC0_CH_A1        : N/A      °C
12 CPU_UMC1_CH_B0        : N/A      °C
13 CPU_UMC1_CH_B1        : N/A      °C
14 CPU_UMC3_CH_C0        : N/A      °C
15 CPU_UMC3_CH_C1        : N/A      °C
16 CPU_UMC2_CH_D0        : N/A      °C
17 CPU_UMC2_CH_D1        : N/A      °C
18 CPU_UMC6_CH_E0        : N/A      °C
19 CPU_UMC6_CH_E1        : 31       °C   OK
1A CPU_UMC7_CH_F0        : N/A      °C
1B CPU_UMC7_CH_F1        : N/A      °C
1C CPU_UMC5_CH_G0        : N/A      °C
1D CPU_UMC5_CH_G1        : N/A      °C
1E CPU_UMC4_CH_H0        : N/A      °C
1F CPU_UMC4_CH_H1        : N/A      °C
99 PVDDCR_CPU            : 1.1352   V    OK
95 PVPP_ABCD             : 2.5596   V    OK
96 PVPP_EFGH             : 2.5434   V    OK
9C PVDDIO_ABCD           : 1.2320   V    OK
9D PVDDIO_EFGH           : 1.2320   V    OK

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

Version 2.22.1281 Copyright (C) 2022 AMI
```

CPU_Tct1_Value	Temperature of the CPU_Tct1
MB_Air_Inlet	Temperature of the MB_Air_Inlet Area
SAS_Air_Outlet	Temperature of the SAS_Air_Outlet Area
SAS_Air_Inlet	Temperature of the SAS_Air_Inlet Area
CPU_CORE_MOSFET	Temperature of the CPU_ CORE_MOSFET
CPU_SOC_MOSFET	Temperature of the CPU_ SOC_MOSFET
DIMM_MOSFET_1	Temperature of the DIMM MOSFET_1
DIMM_MOSFET_2	Temperature of the DIMM MOSFET_2
P0_D1_UMC0_CH_A	The highest temperature of CPU0 D1UMC0 channel A slot
P0_D1_UMC1_CH_B	The highest temperature of CPU0 D1 UMC1 channel B slot
P0_D0_UMC1_CH_C	The highest temperature of CPU0 D0 UMC1 channel C slot
P0_D0_UMC0_CH_D	The highest temperature of CPU0 D0 UMC0 channel D slot
P0_D3_UMC0_CH_E	The highest temperature of CPU0 D3 UMC0 channel E slot
P0_D3_UMC1_CH_F	The highest temperature of CPU0 D3 UMC1 channel F slot
P0_D2_UMC1_CH_G	The highest temperature of CPU0 D2 UMC1 channel G slot
P0_D2_UMC0_CH_H	The highest temperature of CPU0 D2 UMC0 channel H slot
BIOS FAN Sensor	**Name Explanation**
CPU0_FAN	Fan speed of CPU0_FAN
SYS_FAN_1	Fan speed of SYS_FAN_1
SYS_FAN_2	Fan speed of SYS_FAN_2
SYS_FAN_3	Fan speed of SYS_FAN_3
SYS_FAN_4	Fan speed of SYS_FAN_4
SYS_FAN_5	Fan speed of SYS_FAN_5
SYS_FAN_6	Fan speed of SYS_FAN_6
SYS_FAN_7	Fan speed of SYS_FAN_7
SYS_FAN_8	Fan speed of SYS_FAN_8
SYS_FAN_9	Fan speed of SYS_FAN_9
SYS_FAN_10	Fan speed of SYS_FAN_10
SYS_FAN_11	Fan speed of SYS_FAN_11
SYS_FAN_12	Fan speed of SYS_FAN_12

NOTE

Appendix II: How to recover UEFI BIOS

Important Notes:

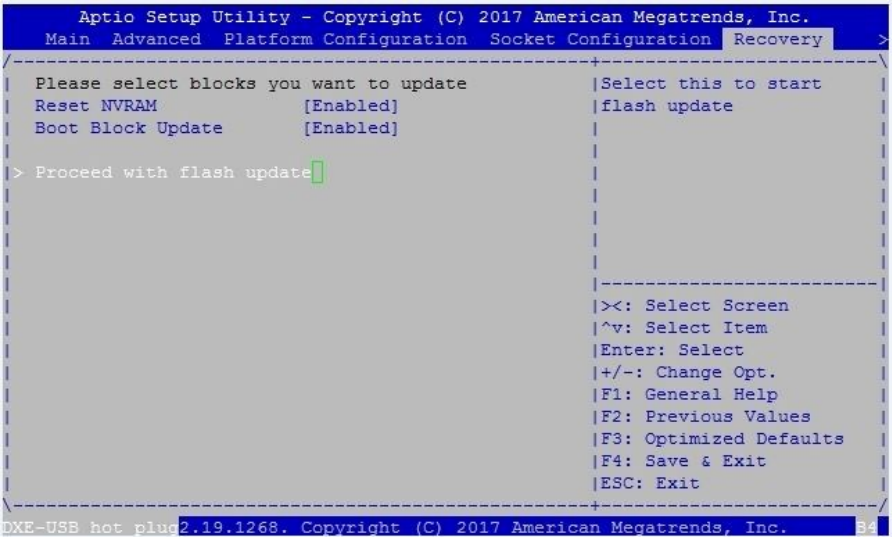
The emergency UEFI BIOS Recovery process is only used to rescue a system with a failed or corrupted BIOS image that fails to boot to an OS. It is not intended to be used as a general purpose BIOS flashing procedure and should not be used as such. Please do not shutdown or reset the system while the BIOS recovery process is underway or there is risk of damage to the UEFI recovery bootloader that would prevent the recovery process itself from working. In no event shall Tyan be liable for direct, indirect, incidental, special or consequential damages arising from the BIOS update or recovery.

The BIOS Recovery file is named xxxx.cap, where the 'xxxx' portion is the motherboard model number. Examples: 5630.cap, 7106.cap, 7109.cap, etc. Please make sure that you are using the correct BIOS Recovery file from Tyan's web site.

BIOS Recovery Process

1.Place the recovery BIOS file (xxxx.cap) in the root directory of a USB disk.
2.Ensure that the system is powered off.
3.Insert the USB disk to any USB port on the motherboard or chassis.
4.Power the system on while pressing “Ctrl” and “Home” simultaneously on the keyboard. Continue to hold these keys down until the following Tyan screen is displayed on the monitor:

5.The system will boot to BIOS setup. A new menu item will appear at the far right of the screen. Scroll to the 'Recovery' tab, move the curser to “Proceed with flash update” and press the "Enter" key on the keyboard to start the BIOS recovery process.



6.IMPORTANT: Do not power off or reboot the server during the BIOS recovery process. This can damage the BIOS recovery bootloader and prevent it from loading a subsequent time.

7.Wait for the BIOS recovery procedure to complete. Completion is signified with the message “Flash update completed. Press any key to reset the system” displayed on screen.

8.Remove the USB disk and reboot.

If your system does not have video output or the POST code halts at “FF” on the right-lower portion of the screen, please contact Tyan representatives for RMA service.

Glossary

ACPI (Advanced Configuration and Power Interface): a power management specification that allows the operating system to control the amount of power distributed to the computer's devices. Devices not in use can be turned off, reducing unnecessary power expenditure.

AGP (Accelerated Graphics Port): a PCI-based interface which was designed specifically for demands of 3D graphics applications. The 32-bit AGP channel directly links the graphics controller to the main memory. While the channel runs only at 66 MHz, it supports data transmission during both the rising and falling ends of the clock cycle, yielding an effective speed of 133 MHz.

ATAPI (AT Attachment Packet Interface): also known as IDE or ATA; a drive implementation that includes the disk controller on the device itself. It allows CD-ROMs and tape drives to be configured as master or slave devices, just like HDDs.

ATX: the form factor designed to replace the AT form factor. It improves on the AT design by rotating the board 90 degrees, so that the IDE connectors are closer to the drive bays, and the CPU is closer to the power supply and cooling fan. The keyboard, mouse, USB, serial, and parallel ports are built-in.

Bandwidth: refers to carrying capacity. The greater the bandwidth, the more data the bus, phone line, or other electrical path can carry. Greater bandwidth results in greater speed.

BBS (BIOS Boot Specification): a feature within the BIOS that creates, prioritizes, and maintains a list of all Initial Program Load (IPL) devices, and then stores that list in NVRAM. IPL devices have the ability to load and execute an OS, as well as provide the ability to return to the BIOS if the OS load process fails. At that point, the next IPL device is called upon to attempt loading of the OS.

BIOS (Basic Input/Output System): the program that resides in the ROM chip, which provides the basic instructions for controlling your computer's hardware. Both the operating system and application software use BIOS routines to ensure compatibility.

Buffer: a portion of RAM which is used to temporarily store data; usually from an application though it is also used when printing and in most keyboard drivers. The CPU can manipulate data in a buffer before copying it to a disk drive. While this improves system performance (reading to or writing from a disk drive a single time is much faster than doing so repeatedly) there is the possibility of losing your data should the system crash. Information in a buffer is temporarily stored, not permanently saved.

Bus: a data pathway. The term is used especially to refer to the connection between the processor and system memory, and between the processor and PCI or ISA local buses.

Bus mastering: allows peripheral devices and IDEs to access the system memory without going through the CPU (similar to DMA channels).

Cache: a temporary storage area for data that will be needed often by an application. Using a cache lowers data access times since the information is stored in SRAM instead of slower DRAM. Note that the cache is also much smaller than your regular memory: a typical cache size is 512KB, while you may have as much as 4GB of regular memory.

Closed and open jumpers: jumpers and jumper pins are active when they are “on” or “closed”, and inactive when they are “off” or “open”.

CMOS (Complementary Metal-Oxide Semiconductors): chips that hold the basic startup information for the BIOS.

COM port: another name for the serial port, which is called as such because it transmits the eight bits of a byte of data along one wire, and receives data on another single wire (that is, the data is transmitted in serial form, one bit after another). Parallel ports transmit the bits of a byte on eight different wires at the same time (that is, in parallel form, eight bits at the same time).

DDR (Double Data Rate): a technology designed to double the clock speed of the memory. It activates output on both the rising and falling edge of the system clock rather than on just the rising edge, potentially doubling output.

DIMM (Dual In-line Memory Module): faster and more capacious form of RAM than SIMMs, and do not need to be installed in pairs.

DIMM bank: sometimes called DIMM socket because the physical slot and the logical unit are the same. That is, one DIMM module fits into one DIMM socket, which is capable of acting as a memory bank.

DMA (Direct Memory Access): channels that are similar to IRQs. DMA channels allow hardware devices (like soundcards or keyboards) to access the main memory without involving the CPU. This frees up CPU resources for other tasks. As with IRQs, it is vital that you do not double up devices on a single line. Plug-n-Play devices will take care of this for you.

DRAM (Dynamic RAM): widely available, very affordable form of RAM which looses data if it is not recharged regularly (every few milliseconds). This refresh requirement makes DRAM three to ten times slower than non-recharged RAM such as SRAM.

ECC (Error Correction Code or Error Checking and Correcting): allows data to be checked for errors during run-time. Errors can subsequently be corrected at the same time that they're found.

EEPROM (Electrically Erasable Programmable ROM): also called Flash BIOS, it is a ROM chip which can, unlike normal ROM, be updated. This allows you to keep up with changes in the BIOS programs without having to buy a new chip. TYAN®'s BIOS updates can be found at http://**www.tyan.com**

ESCD (Extended System Configuration Data): a format for storing information about Plug-n-Play devices in the system BIOS. This information helps properly configure the system each time it boots.

Firmware: low-level software that controls the system hardware.

Form factor: an industry term for the size, shape, power supply type, and external connector type of the Personal Computer Board (PCB) or motherboard. The standard form factors are the AT and ATX.

Global timer: onboard hardware timer, such as the Real-Time Clock (RTC).

HDD: stands for Hard Disk Drive, a type of fixed drive.

H-SYNC: controls the horizontal synchronization/properties of the monitor.

HyperTransport™: a high speed, low latency, scalable point-to-point link for interconnecting ICs on boards. It can be significantly faster than a PCI bus for an equivalent number of pins. It provides the bandwidth and flexibility critical for today's networking and computing platforms while retaining the fundamental programming model of PCI.

IC (Integrated Circuit): the formal name for the computer chip.

IDE (Integrated Device/Drive Electronics): a simple, self-contained HDD interface. It can handle drives up to 8.4 GB in size. Almost all IDEs sold now are in fact Enhanced IDEs (EIDEs), with maximum capacity determined by the hardware controller.

IDE INT (IDE Interrupt): Hardware interrupt signal that goes to the IDE.

I/O (Input/Output): the connection between your computer and another piece of hardware (mouse, keyboard, etc.)

IRQ (Interrupt Request): an electronic request that runs from a hardware device to the CPU. The interrupt controller assigns priorities to incoming requests and delivers them to the CPU. It is important that there is only one device hooked up to each IRQ line; doubling up devices on IRQ lines can lock up your system. Plug-n-Play operating systems can take care of these details for you.

Latency: the amount of time that one part of a system spends waiting for another part to catch up. This occurs most commonly when the system sends data out to a peripheral device and has to wait for the peripheral to spread (peripherals tend to be slower than onboard system components).

NVRAM: ROM and EEPROM are both examples of Non-Volatile RAM, memory that holds its data without power. DRAM, in contrast, is volatile.

Parallel port: transmits the bits of a byte on eight different wires at the same time.

PCI (Peripheral Component Interconnect): a 32 or 64-bit local bus (data pathway) which is faster than the ISA bus. Local buses are those which operate within a single system (as opposed to a network bus, which connects multiple systems).

PCI PIO (PCI Programmable Input/Output) modes: the data transfer modes used by IDE drives. These modes use the CPU for data transfer (in contrast, DMA channels do not). PCI refers to the type of bus used by these modes to communicate with the CPU.

PCI-to-PCI Bridge: allows you to connect multiple PCI devices onto one PCI slot.

Pipeline burst SRAM: a fast secondary cache. It is used as a secondary cache because SRAM is slower than SDRAM, but usually larger. Data is cached first to the faster primary cache, and then, when the primary cache is full, to the slower secondary cache.

PnP (Plug-n-Play): a design standard that has become ascendant in the industry. Plug-n-Play devices require little set-up to use. Devices and operating systems that are not Plug-n-Play require you to reconfigure your system each time you add or change any part of your hardware.

PXE (Preboot Execution Environment): one of four components that together make up the Wired for Management 2.0 baseline specification. PXE was designed to define a standard set of preboot protocol services within a client with the goal of allowing networked-based booting to boot using industry standard protocols.

RAID (Redundant Array of Independent Disks): a way for the same data to be stored in different places on many hard drives. By using this method, the data is stored redundantly and multiple hard drives will appear as a single drive to the operating system. RAID level 0 is known as striping, where data is striped (or overlapped) across multiple hard drives, but offers no fault-tolerance. RAID level 1 is known as mirroring, which stores the data within at least two hard drives, but does not stripe. RAID level 1 also allows for faster access time and fault-tolerance, since either hard drive can be read at the same time. RAID level 0+1 is striping and mirroring, providing fault-tolerance, striping, and faster access all at the same time.

RAIDIOS: RAID I/O Steering (Intel)

RAM (Random Access Memory): technically refers to a type of memory where any byte can be accessed without touching the adjacent data and is often referred to the system's main memory. This memory is available to any program running on the computer.

ROM (Read-Only Memory): a storage chip which contains the BIOS; the basic instructions required to boot the computer and start up the operating system.

SDRAM (Synchronous Dynamic RAM): called as such because it can keep two sets of memory addresses open simultaneously. By transferring data alternately from one set of addresses and then the other, SDRAM cuts down on the delays associated with non-synchronous RAM, which must close one address bank before opening the next.

Serial port: called as such because it transmits the eight bits of a byte of data along one wire, and receives data on another single wire (that is, the data is transmitted in serial form, one bit after another).

SCSI Interrupt Steering Logic (SISL): Architecture that allows a RAID controller, such as AcceleRAID 150, 200 or 250, to implement RAID on a system board-embedded SCSI bus or a set of SCSI busses. SISL: SCSI Interrupt Steering Logic (LSI) (only on LSI SCSI boards)

Sleep/Suspend mode: in this mode, all devices except the CPU shut down.

SDRAM (Static RAM): unlike DRAM, this type of RAM does not need to be refreshed in order to prevent data loss. Thus, it is faster and more expensive.

SLI (Scalable Link Interface): NVIDIA SLI technology links two graphics cards together to provide scalability and increased performance. NVIDIA SLI takes advantage of the increased bandwidth of the PCI Express bus architecture, and features hardware and software innovations within NVIDIA GPUs (graphics processing units) and NVIDIA MCPs (media and communications processors). Depending on the application, NVIDIA SLI can deliver as much as two times the performance of a single GPU configuration.

Standby mode: in this mode, the video and hard drives shut down; all other devices continue to operate normally.

UltraDMA-33/66/100: a fast version of the old DMA channel. UltraDMA is also called UltraATA. Without a proper UltraDMA controller, your system cannot take advantage of higher data transfer rates of the new UltraDMA/UltraATA hard drives.

USB (Universal Serial Bus): a versatile port. This one port type can function as a serial, parallel, mouse, keyboard or joystick port. It is fast enough to support video transfer, and is capable of supporting up to 127 daisy-chained peripheral devices.

VGA (Video Graphics Array): the PC video display standard.

V-SYNC: controls the vertical scanning properties of the monitor.

ZCR (Zero Channel RAID): PCI card that allows a RAID card to use the onboard SCSI chip, thus lowering cost of RAID solution

ZIF Socket (Zero Insertion Force socket): these sockets make it possible to insert CPUs without damaging the sensitive CPU pins. The CPU is lightly placed in an open ZIF socket, and a lever is pulled down. This shifts the processor over and down, guiding it into the board and locking it into place.

Technical Support

If a problem arises with your system, you should first turn to your dealer for direct support. Your system has most likely been configured or designed by them and they should have the best idea of what hardware and software your system contains. Hence, they should be of the most assistance for you. Furthermore, if you purchased your system from a dealer near you, take the system to them directly to have it serviced instead of attempting to do so yourself (which can have expensive consequences).

If these options are not available for you then TYAN® Computer Corporation can help. Besides designing innovative and quality products for over a decade, TYAN has continuously offered customers service beyond their expectations. TYAN®'s website (**www.tyan.com**) provides easy-to-access FAQ searches and online Trouble Ticket creation as well as Instant Chat capabilities with our Support Agents. TYAN® also provides easy-to-access resources such as in-depth Linux Online Support sections with downloadable Linux drivers and comprehensive compatibility reports for chassis, memory and much more. With all these convenient resources just a few keystrokes away, users can easily find the latest software and operating system components to keep their systems running as powerful and productive as possible. TYAN® also ranks high for its commitment to fast and friendly customer support through email. By offering plenty of options for users, TYAN® serves multiple market segments with the industry's most competitive services to support them.

"TYAN's tech support is some of the most impressive we've seen, with great response time and exceptional organization in general" - Anandtech.com

Help Resources:

1. See the beep codes section of this manual.
2. See the TYAN® website for FAQ's, bulletins, driver updates, and other information: **http://www.tyan.com**
3. Contact your dealer for help BEFORE calling TYAN®.
4. Check the TYAN® user group in Google Forum: **alt.comp.periphs.mainboard.TYAN**

Returning Merchandise for Service

During the warranty period, contact your distributor or system vendor FIRST for any product problems. This warranty only covers normal customer use and does not cover damages incurred during shipping or failure due to the alteration, misuse, abuse, or improper maintenance of products.

NOTE:
A receipt or copy of your invoice marked with the date of purchase is required before any warranty service can be rendered. You may obtain service by calling the manufacturer for a Return Merchandise Authorization (RMA) number. The RMA number Should be prominently displayed on the outside of the shipping carton and the package should be mailed prepaid. TYAN® will pay to have the board shipped back to you.

Notice for the USA
Compliance Information Statement (Declaration of Conformity Procedure) DoC
FCC Part 15: This device complies with part 15 of the FCC Rules

Operation is subject to the following conditions:

This device may not cause harmful interference, and this device must accept any interference received including interference that may cause undesired operation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try one or more of the following measures:
Reorient or relocate the receiving antenna.
Increase the separation between the equipment and the receiver.
Plug the equipment into an outlet on a circuit different from that of the receiver.
Consult the dealer on an experienced radio/television technician for help.

Notice for Canada
This apparatus complies with the Class B limits for radio interference as specified in the Canadian Department of Communications Radio Interference Regulations. (Cet appareil est conforme aux norms de Classe B d'interference radio tel que specifie par le Ministere Canadien des Communications dans les reglements d'ineteference radio.)

CAUTION: Lithium battery included with this board. Do not puncture, mutilate, or dispose of battery in fire. There is danger of an explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by manufacturer. Dispose of used battery according to manufacturer instructions and in accordance with your local regulations.

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